Real house prices and inequality in Auckland New Zealand, 1905-1942: lessons from the past?

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Abstract

Real house prices are increasing in western countries and especially in job-rich cities, reversing long-run 20th century trends. Drivers may include planning bottlenecks, migration patterns, falling real median wages, and property hoarding by wealthy elites. In this study I explore whether changes in housing affordability in Auckland New Zealand in 1905-1942 can offer insights for studies of today's house price trends. I use newspaper advertisements of houses for sale through 1905-1942, develop a time series of average Auckland house prices, and set these alongside wages, consumer prices, building costs, rent and economic inequality measures. Despite war, economic boom, steady immigration, depression and recovery, housing became steadily more affordable, as inequality indices reduced. This parallels reducing economic inequality in western countries at the time and increasing expectations of mass home ownership. I argue this supports the view that economic inequality is a major factor in today's housing affordability crisis.

Keywords:

Housing affordability; economic inequality; Auckland real estate costs; housing policy

1. Introduction

In his study I investigate prices of houses for sale in Auckland, New Zealand (NZ) in 1905-1942 and analyse the trend of average Auckland house price against trends in wages, consumer price index, interest rates, rent, and building costs. I find that housing affordability improved almost continually during this period but that none of these other trends explains the steady this. I then explore trends in NZ's economic inequality indices, and suggest a possible explanation in changing macroeconomic factors at that time, in that economic inequality was reducing in NZ as it was throughout the western world.

My data source for house prices is over 4,000 classified advertisements in the 'Houses and land for sale' section of the NZ Herald in all years 1918-1942 plus 1905, 1910 and 1914. The NZ Herald was the main Auckland newspaper before, during and after this period and offered the most comprehensive collection of house sale advertisements available to prospective buyers. For data on wages and other economic variables I use NZ Official Yearbooks supplemented by Parliamentary papers and other newspapers of the times.

The meaning of 'Auckland' in this study is fluid and relates to the areas of populated land that continually expanded and coalesced as a functioning, socially and commercially integrated population centre. While Auckland's growth in this period is well documented (King, 2003), I track its geographical expansion more precisely using information in the NZ Herald advertisements that supply the data on house prices, plus those for 1900.

Although housing costs in 1905-1942 may seem remote from today's housing affordability issues, I explore here whether they could offer an important dimension to today's discussion. In particular, my approach is informed by recent research on long-run trends in economic inequality (e.g., Piketty, 2014), historic patterns of home ownership (Clarke, 1998; Fernandez et al., 2016; Gurney, 2010) and historical issues of wealth accumulation and wealth defence (Winters, 2014; 2017).

There is now much literature on the increasing unaffordability of housing globally (Cerutti et al., 2017). Studies for specific countries include NZ (Murphy, 2011; 2014; Thorns, 2009), Australia (Gurran and Phibbs, 2014; Stebbing and Spies-Butcher, 2016; Yates, 2008), the US (Fernandez et al, 2016), the UK (Clarke et al., 2016; Gallent, 2016), Canada (Walks, 2012) and Continental European countries (Bouyon, 2015). Studies also explore the extreme unaffordability of housing in some of these countries' more prosperous cities, including Auckland (Murphy, 2016).

Data from the OECD (2016) indicate that the real (i.e. inflation adjusted) price of houses in OECD countries increased, on average, by 94% from 1970 to 2015. The biggest increases were in Britain (378%), NZ (289%), Australia (267%), Canada (216%), Ireland (214%) and Norway (212%); the smallest was in Germany (9.5%). In the US, which suffered large falls in real estate prices during the 2008 economic crisis, the increase was 84%. Figure 1 shows the changes in real purchase price of new and existing homes in selected OECD countries and the OECD average, based on an index of 1 for the First Quarter of 1970. All the selected countries except Germany saw a peak before the 2008 economic crisis and a dip during the crisis followed by recovery. These are real, not nominal, price indices, so that, for example, from 1970 to 2015 house prices in NZ increased by about three times the dollar increase in all goods and services combined, becoming almost four times their real 1970 price.



Another way of illustrating changes in house affordability is to compare average house price with average household income, which includes the combined wages of all household members. By combining statistics from the Reserve Bank of NZ, Statistics NZ, the NZ Institute of Economic Research and Quotable Value NZ, Eaqub and Eaqub (2015: 14) show that the average NZ house price increased from 2.5 times average household income in 1957, to 6.1 times in 2015. By this measure, houses were 3.1 times as expensive in real terms in 2015 as in 1957.

House price increases in job-rich, highly desirable cities have been greater than these country-wide increases. Examples are Cambridge UK, Auckland NZ, Sydney Australia, Vancouver Canada and Munich Germany. Auckland house prices increased by twice the national rate from 1980 to 2015 (Kendall, 2016) and are now around 17 times the average wage. The effects of these steep, persistent increases in real house price are now being seen in important ways in OECD countries. The rate of home ownership in NZ peaked in 1991 at 76% after a previous peak of 70% in 1961, and fell to around 63% by 2015 (Eaqub and Eaqub, 2015:10). This reversed the persistent trend of increasing home ownership dating from at least 1935.

A number of studies have explored possible reasons for the global house price boom including that in NZ and Auckland in particular. A degree of inverse correlation has been found between mortgage interest rates and house prices (Cerutti et al., 2017). Excess of demand over supply appears to be significant factor, exacerbated by rapid immigration and inflexible planning regulations and procedures (Eaqub and Eaqub, 2015; Knoll et al., 2014). An excess of free global capital also appears to play an important role, as wealthy investors often treat real estate as a 'safe deposit box' (Fernandez et al., 2016; Fernandez and Albers, 2016) for their wealth in countries with strong property rights (Chao and Yu, 2015; Gallent, 2016; cf. Acemoglu and Robinson, 2012; Winters, 2014). A further factor is the loan-to-value ratio, which effectively sets the minimum amount required for a deposit (Bourassa and Shi, 2016).

An interesting feature of this literature is that it tends to accept the underlying view that home owner-occupation is the normal state of affairs in human society and a reduction in owner-occupation rates needs to be explained. While universal or near-universal home ownership may be morally desirable (which is the author's view), the period of history where most people have owned their own homes has been very short (Gurney et al., 2010). For most of recorded history the existing records show that homes were mostly owned by a wealthy elite (Hoffman et al., 2002), and their rental returns have sometimes achieved, and sometimes not achieved, the classic, historical net return on income of around 4-5% (Clark, 1998) as identified by Piketty (2014) as the historical norm for investment of capital. A novel approach might therefore be to set the current housing affordability crisis in a very long-run context and ask the question the other way round: What factors led to increasing home affordability in the 20th century and what can we learn from this for constructing a desired future in home ownership and affordability? In this study I offer a modest attempt to begin to look at the issue this way round, by way of a small case study of housing affordability trends in Auckland in the first four decades of the 20th century.

Section 2 explains the methods used to collect and process the data. The results for house prices, wages, the CPI, rents and building costs are presented in Section 3. Results for long-run trends in economic inequality are presented in Section 4. Results are critically discussed and further analysed in Section 5, and Section 6 concludes.

2. Method

2.1 House prices

There are no official statistics for average or median house prices in New Zealand or any of its regions for the first half of the 20^{th} century. I therefore developed a time series of average and median *nominal* house prices (i.e. their prices in the currency of the time, £s) in Auckland using newspaper advertisements of houses for sale. The data source chosen was the New Zealand Herald, due to its consistency as the main daily newspaper in Auckland prior to, during and since the period under study. The New Zealand

National Library service offers a large collection of New Zealand newspapers including the New Zealand Herald and other documents on line for the period 1865-1945 for free downloading (<u>www.paperspast.natlib.govt.nz/</u>).

For consistency, I chose all the relevant entries in the New Zealand Herald's 'Houses and Land for sale' column on the first suitable date in or after August of each of the years investigated, as the data source for that year. August and early spring (southern hemisphere) appeared to have about the average number of entries in most years. In cases where prices seemed unusually low or high I checked by comparing with another date in the same year.

I define 'relevant' entries as advertisements offering a house for sale within the region that could reasonably be considered part of the Auckland metropolitan area in the year of the advertisements. For example, I did not include small farms in outlying areas such as Papatoetoe, Mangere, Henderson and Otahuhu in the data in the first two decades. However, I included houses on up to one acre in these districts in the later decades when the metropolitan area had expanded such that regular transport and commuting had made these into suburbs. The important consideration was not where the official district boundaries lay, but what houses were likely to be considered for purchase by someone living in or wanting to live in the commercial, social, industrial and polity centre that was, at the time, 'Auckland'. These were the houses such a purchaser had to choose from. The spreadsheet of data produced in this study from all advertisements is available as supplementary data so that it can be more widely used in further research.

For an entry to be 'relevant' it also had to include the asking price, given in those days in \pounds (pounds). Where advertisements also gave the number of rooms I recorded this, and made a parallel calculation of 'price per room'. This is a rather artificial parameter, since room size and function vary, and service rooms such as bathrooms and kitchenettes are not included in the advertisers' count of rooms. However, it enabled data to be compared with official statistics of building costs of the time, which were categorised by 'number of rooms' in a house. I also recorded mortgage finance interest rate and deposit where these were given, along with other interesting information such as rental income if a house was let.

In the early part of the 20th century the most popular day for 'Houses and land for sale' advertisements appeared to be Wednesday, but this shifted to Saturday in the 1920s and Friday in the mid-1940s. For each year's data I used the most popular day of the week. For 1914, I chose 1 July against these rules, since Britain and then New Zealand declared war on Germany and its allies on 4 August, which might have affected habits of advertising houses in the days immediately following.

Each selected day gave 80-180 relevant entries. A total of 3,288 advertisements yielded relevant results for the 31 years investigated, an average of 106 relevant advertisements for each year's values. I assume that the average and median values of these are the average and median amounts prospective buyers had to reckon with when considering buying a house in Auckland, since they had no other major, readily available sources of information on all or most of the houses for sale. However, these values are probably not the precise average or median of what people actually paid for houses, which is likely to be a little less, for two main reasons.

Firstly, many houses were sold for less than their advertised price but very seldom for more, since generally a house would sell to the first buyer who made an acceptable offer, which could be less than the asking price (the reverse of what often happens today). Further, about 10% of the advertisements overall, and up to 30% during the years of the Depression of 1929-1936 (hereinafter 'Depression'), included words such as 'or near offer'; 'or offer'; or 'any reasonable offer considered'.

Secondly, more expensive houses might have been advertised more often in the newspaper than cheaper houses, since the selling agents would be expecting more commission and could therefore invest more. On the other hand, this would be dampened by the fact that more expensive houses tended to have larger (and costlier) advertisements, often with up to 20 times as many lines as for the cheapest houses.

Nevertheless, the slight inflation of value caused by these effects was probably consistent over time, and the focus of the study is on comparative affordability trends over time rather than absolute values.

I collected this house price data for 1905, 1910, 1914 and all years 1918-1942, as sufficient data on other parameters such as wages, building costs, the consumer price index (CPI) and inequality factors were available for most of those years. I used data for 1900 to form a base line for suburbs regarded as part of 'Auckland' at the turn of the century, but the number of advertisements in 1900 was too small to be used with confidence for estimating average house prices.

2.2 Wages and prices

Editions of The *New Zealand Official Yearbook* from that period (also available free online) give NZ-wide average male, average female and average overall wages. There are also more detailed tables of wages by city and region, of specific occupations, enabling comparisons to be made between Auckland and NZ-wide wages on a per-occupation basis. Cross-checks on the Yearbook wage values were available to some extent by searching among newspapers and parliamentary documents for information on minimum wages, industrial awards, court reports of wage increases over time, and other relevant court decisions.

As there were no statistics for median wages, I used averages. This brings the disadvantage that the average is usually higher than most people receive, due to the skewing effect of a few people's very high wages. However, I found a similar skewing effect with house prices, so it seems meaningful to make a comparison between average nominal house price and average wage, especially when the focus is on exploring long term trends.

The Yearbooks also gave data on the cost of living (consumer price index – CPI) and on rent prices, but only up to 1938. I used these sparingly since they did not cover the entire period.

2.3 Economic inequality

The Yearbooks offer no statistics on the wealth distribution among the population. However, they give the monetary value of deceased estates in each year, divided into wealth bands. This approach has also been used in UK official statistics (Atkinson, 1975). In NZ all deceased estates worth £200 (nominal) or more had to be declared, though many were declared even though they were poorer. Using these statistics I made a year-by-year comparison of economic inequality among deceased estates. For each year of the study I used these statistics to compute the Gini coefficient as well as the share of total estate wealth owned by the richest 10% and the richest 1% of estates, plus two different measures of the real spending power of those at the top of the wealth pyramid.

Using deceased estates suffers the obvious limitation that the wealth distribution among the dying may be different from that of the living. It also brackets out the approximately 60% of the deceased who owned little or nothing at death and are therefore not represented in the statistics. Including these people would show wealth inequality indices to be far higher (Atkinson, 1975). However, this approach can at least indicate how inequality changed over time, since *trends over time* in inequality among the dying

are unlikely to be much different from trends in inequality among the living. The absolute values, of course, may be different, so the method should not be used to estimate societal inequality in particular years.

3. Results

3.1 House price trends 1905-1942

Figure 2 displays average and median nominal house prices in 'Auckland' (see above for definition) for the years 1900-1942, as well as average price per room, calculated from the advertisements for each year. Average price per room is again displayed in Figure 3 at a larger scale for easy visual comparison. Note that there is little confidence in the average house price value for 1900 due to paucity of data.



Referring to Figure 2, the average Auckland nominal house price increased steadily from £658 in 1905 to £901 in 1914, then more gradually during WWI to £935 in 1918. There was then a sharp increase in 1919-1920, corresponding with an economic boom immediately after WWI. After a peak of £1,441 in 1921, which was not reached again throughout the entire period, there was a temporary dip in 1922. This might have been influenced by the sudden drop in NZ's export receipts in 1921. Prices recovered in 1922 and remained high until the late 1920s, a time of strong economic performance often called the 'roaring 20s'. House prices then began to collapse in 1930 after share market crash of 1929, falling to a trough of £767 in 1935. Prices then increased steadily, along with economic recovery and the reflationary policies of the first Labour government. The recovery continued into the period of WWII.

The median nominal house price tracks the average fairly consistently, a few percentage points below it in most years, with three notable exceptions where it falls more deeply below the average: the middle of the price hike after WWI, the boom years of the mid-1920s and the trough of the Depression. A low median indicates that the average is inflated by a number of very high-priced houses (as in the 1920s), or that the median is reduced due to a large number of very low-priced houses (as in the mid-1930s).

Figure 3 indicates that the shape of the trend for 'average nominal asking price per room' for Auckland houses follows that of average price quite closely. The values for

Remuera, one of Auckland's oldest and wealthiest suburbs, are also given for comparison and will be referred to later.



3.2 Wages and the cost of living

Attempts to develop a time series of average wages in Auckland for 1905-1942 failed, despite intensive searches through newspapers, magazines and parliamentary papers. However, the NZ Official Yearbooks gave nationwide average male, female and composite wages for each year from 1918 and also for 1914, 1910 and 1915. For most years the Yearbooks also listed average male, female and composite wages for various occupations in each of eight to ten population centres. Generally, Auckland wages for most occupations, particularly industrial and professional, were close to those of all other centres except Wellington, where wages were often higher. However, retail shop wages in Auckland were around 20% above those of other centres, whereas farm wages were about 10% lower. Table 1 gives an example from 1909. Farm work was a small factor in Auckland, a metropolitan centre, while shop work was far more prevalent. While this might have made Auckland average wages lower than the national average, but the proportionate changes over time most likely followed national trends.

Factory Wages (£/yr)		Shop wages (£/yr)	
Auckland	NZ	Auckland	NZ
89	89	64	53

Table 1. Comparison of Auckland and NZ-wide wages in factory and shop sectors, 1909. Source: NZ Official Yearbook, 1910.

A further factor was that female average wages were only 42.5% of male in 1915, increasing only to 44.6% by 1942. This is partly due to employers' legal right, at the time, to pay women lower wages than men for the same job. However, female average wages were reduced further because most women did not stay in the waged workforce long enough to move on to advanced, well-paid careers. This has important implications for house purchase decisions. A mortgage had to be serviced by the ongoing wage, which was most likely that of a male. Comparing the average house price to the average male wage is therefore likely to give a better indication of home affordability than comparing it to the composite average wage.

Youth wages were well below adult wages for the period under investigation, but were increasing over time. Table 2 gives an example from 1920, a decision of the Hawkes Bay magistrate's court on wage rates for apprentice carpenters. Wages range from £39 per year for a first year apprentice to £150 per year for a fifth year apprentice with City and Guild qualifications, to £257 for a carpenter tradesman and £272 for a carpenter tradesman semi-foreman (Source: Evening Post, 11 June 1920). The average male wage for that year was £210 (NZ Official Yearbook, 1925). The first year apprentice's wage was only 15% of the tradesman's wage, but apprentices' wages were included in the calculation of the average male wage. Importantly, youth wages increased over the years of the study, so that high court awards from various districts show apprentice wages increasing relative to trades wages as the years progress. This would have contributed to an increasing average wage over the years of the study.

apprentice carpenter 1st yr	£39.00
apprentice carpenter 2nd yr	£52.00
apprentice carpenter 3rd yr	£78.00
apprentice carpenter 4th yr	£91.00
apprentice carpenter 5th yr	£130.00
apprentice carpenter 4th yr with C&G	£104.00
apprentice carpenter 5th yr with C&G	£150.00
carpenter tradesman	£257.40
carnenter tradesman semi-foreman	£272.00

Table 2. Hawkes Bay magistrate's court ruling on wage rates for apprentice carpenters, 1920. Source: Evening Post, 11 June 1920.

Figure 4 shows NZ-wide average male wages from 1900 to 1942 according to entries in the NZ Official Yearbooks. A similar shape is observed to that for average Auckland nominal house prices (from 1905), but not as volatile. Figure 5 shows the two curves alongside each other, indexed to 1 for 1905 values. The index of nominal house prices rises more slowly than that of wages, apart from a brief spurt immediately after WWI, indicating that houses were becoming more affordable throughout the period. Figure 6 gives the ratio of Auckland average nominal house price to NZ average male wage for 1905-1942. This reduces more or less steadily throughout the 4 decades: in 1905 the average asking price for a house in Auckland was 7.4 times the NZ average male wage; by 1942 this had reduced to 4.2. There is volatility upwards in the years immediately after WWI and downwards during the trough of the depression, but the overall downward trend is clear ($p = 3.27 \times 10^{-11}$, i.e. there is 99.9999999327% confidence of a downward trend). The linear regression line inserted on Figure 6 has correlation coefficient R²=0.86 indicating that the year-by year variation was not far from the general trend. It is fair to say that houses became progressively more affordable in the first three-and-a-half decades of the 20th century and that this trend continued despite the upheavals of war, post-war boom, economic depression and recovery from depression. Further, the shape of this trend would be the same regardless of whether different forms of 'average' wage were used, since the female and composite averages tracked the male average.







A further comparison is afforded by the curves in Figure 7, for the CPI (including rent); the cost of rent; and the average nominal Auckland house price, for 1914-1938. The curves all have the same general shape, but that for house prices falls continually further below the others. Average Auckland nominal house prices were falling in relation to all these other parameters, except for a short period after WWI when they increased faster than rents.



3.3 Building costs, land availability and real house prices

To what extent were house prices influenced by land availability and building costs? Regarding land costs, the asking price of a 'section' (allotment for building on) in newspaper advertisements varied from around £50 to £200 in 1905-1942 and seldom reached the level of the average wage. Since the average nominal house price remained in a band between £658 and £1,447 during this entire period, the price of land was always a relatively small element in the house price. Further, although the population of Auckland was steadily increasing during this period (King, 2003), its geographical reach was also increasing. Table 3 lists the suburbs or districts according to the year they appeared for the first time in the Houses and Land for sale column, beginning in 1900, for the years investigated in the study. This shows Auckland expanding in two different ways: outwardly, as villages such as Henderson, Otahuhu and Pakuranga become included in it along with increasing numbers of districts on the North Shore (of the main harbour); and inwardly, as areas such as Mission Bay and Kohimarama, which were surrounded by urban sprawl, get built on. This partly explains why there was no significant progressive upward pressure on the price or availability of land due to population increase.

Year	New suburbs appearing in House for Sale advertisements
1900	Ponsonby, Central, Devonport, Surrey Hills, Birkenhead, Mt Eden, Onehunga, Remuera, Avondale
1905	Hobsonville, Epsom, Grey Lynn, Kingsland, Parnell, Grafton, Browns Bay, Howick, Cheltenham Beach, Mt Roskill, Glenmore, Mr Roskill, St Heliers, Eden Terrace, Newton, Greenlane, Balmoral, Mt Albert, Newmarket, Royal Oak, Te Papa, Takapuna, Penrose
1910	Panmure, Morningside, Papatoetoe, Pt Chevalier
1914	Otahuhu, Herne Bay, Stanley Point, Sandringham
1918	Bayswater, Pt Erin
1919	New Lynn, One Tree Hill, Papakura, Mangere, Henderson, Stanley Bay, Edendale, Ellerslie, Northcote, Western Springs
1920	
1920	Titirangi, Manurewa, Khyber Pass, New Lynn
1921	Milford, Cheltenham, Campbells Beach
1922	Swanson
1923	Murrays Bay, suburban, Narrow Neck, Takanini, Archhill, Kohimarama
1924	Belmont, North Shore, Westfield, Glen Eden, Waiheke
1925	Pakuranga
1926	Ostend Waiheke, Gt Sth Rd
1927	Westmere
1928	Bucklands Beach, Onetangi
1929	
1930	
1931	Mission Bay
1932	
1932	Albany, Waitakere
1933	
1934	
1935	Western Suburbs
1935	Hillsborough, Mangere Bridge
1936	Weymount, Meadowbank
1937	Beachlands, Maraitai, Mairangi Bay, Blockhouse Bay
1938	Orakei, Middlemore, Hillsborough, Thornes Bay, Harp of Erin, Ladies Mile
1939	Campbells Bay, Manly, Hellensville, Narrowneck, Piha, Birkdale
1940	Beachhaven, Mairangi May, Three Kings, Mangere East, Waiatarua
1941	Castor Bay, Shelly Park
1942	Glendowie, Torbay, Mt Wellington, Oratia, Laingholm
1945	Rothesay Bay, Palm Beach, Eden Park, Reservoir Cnr

Table 3. Suburbs or districts according to the year they appeared for the first time in the Houses and Land for sale column in the NZ Herald, for the years investigated.

Knoll et al. (2014) argue that falling real house prices in a number of countries in the first half of the 20th century were driven by the falling cost of transport, as this enabled land outside of existing main centers to be used for housing, thus giving house purchasers cheaper options than those in inner city areas. If this were the case in

Auckland, we would expect to see a significantly higher long-run increase (or lower long-run fall) in the cost of housing in established inner city or city-ring suburbs, compared to the increase (or fall) in house prices throughout the district.

To explore this theory I compared the trend over time of the average nominal per-room price of Auckland houses in each year, with that of houses in Remuera. Remuera was the most consistently expensive suburb with the highest proportion of 'Gentleman's residence' tags in advertisements. It was an early suburb that retained its geographical scope and identity throughout the period. Its land area was bounded and limited, whereas 'Auckland' was continually expanding. The two curves are displayed in Figure 3. A regression analysis of these two curves shows that for every 1% increase in Auckland per-room price, the Remuera per-room price increased by 1.05%. Although this is statistically significant ($p = 1.53 \times 10^{-9}$) it is a very small difference, and hardly points to a large increasing gulf between outer suburban and city-ring prices. The increasing affordability of Auckland houses compared to wages cannot be fully explained by falling transport costs, or the difference would be much greater.

Further, there appears to be no upward or downward pressure on nominal house prices due to the cost of building houses. Data is available for the average cost of building a house in NZ of different sizes, according to numbers of rooms, for 1926-1940 (NZ Official Yearbooks). Figure 8 shows the average cost of building a 5-room house (excluding land cost) mapped against the average wage, for these years, indexed to 1 for the year 1926. The two follow each other closely (regression coefficient R^2 =0.956), with the building cost index falling slightly below the wage index during the Depression, then catching up again. Hence the cost of building a new house tended to track wages, even though the asking price of (the mix of new and existing) homes progressively reduced in relation to wages.



I also compare the trends in building costs to those in nominal house prices. The ratio between Auckland average nominal house price and nominal building cost of a 5-room home is displayed in Figure 9. This ratio fell from around 1.5 in 1926 to around 1.1 in 1940. This raises the interesting question as to why real house prices should fall when real costs of building remain constant.



One possible explanation might have to do with gradual changes in the size of houses. Figure 10 shows the average number of rooms in houses advertised for sale in 1905-1942. The number appears to have reduced from an early peak of 6.5 in 1910 to around 5.5 by 1922, then varied within a narrow range about that value until 1937, then begun to fall slightly. This is further investigated in Figure 11, which shows the changes in room numbers and what I will call 'real house prices' (Auckland average nominal house price divided by NZ average male wage), both indexed to 1 for 1905. This gives the interesting result that number of rooms and real house price fell at about the same rate until the early 1920s, then both levelled off until the late 1920s, after which real house prices fell steadily while the number of rooms stayed more or less constant. It is possible, then, that the reduction in the size of houses for sale in the first 25 years of the century was a determining factor in the reduction in the real price of houses for sale over those years. Smaller houses were being built, reducing the average size of houses and making them cheaper. After that, however, real house prices fell persistently while number of rooms per house levelled off.





A further possible indicator is the interest rates offered, in the advertisements, for mortgages on house purchases. Some of these mortgages appear to be from private finance, others from government mortgages such as the 'soldiers' loan' in the decade after WWI. There is little variation in interest rates about an overall mean of 5.6%, with a peak of 6.0% in and immediately after the 'roaring 20s', a low of 4.0% during the depression and a slight increase to 4.3% by WWII. In general, interest rates move in the same direction as nominal prices, possibly indicating that both are responding to the same market signals: offering to leave finance in at low interest might help to sell a house during the depression when buyers were short of cash, whereas a seller could demand higher rates when the economy was buoyant. However, the movements in interest rates are too small to suggest these played much of a role in determining house prices.

4. Housing costs and economic inequality

So far I have shown that the relative price of Auckland housing reduced when calculated in relation to wages, the CPI, rents, building costs and, as from the late 1920s, the number of rooms per house. This occurred with remarkable consistency despite the economic volatility associated with WWI and its aftermath, the 'roaring 20s', the depression, the inflationary policies of the depression's aftermath and the initial disruption of the start of WWII.

The reduction in house size up to the early 1920s might explain some of the reduction in real house price in those years, but none of the parameters so far explored explain the continued reduction from that time on. I therefore explored whether changing patterns of wealth inequality might coincide with changing patterns of real house prices.

There are no existing statistics on NZ wealth inequality in 1905-1942. However, the NZ Official Yearbooks of that period gave the value of all deceased estates declared, in each year in 1913-1947, plus bands of years prior to that, in 10 graded steps up to a top step of £20,000 or more. The example of 1930 is given in Table 4. Using these tables I calculate the average value per estate in each value range, for each of the years 1913-1943 and for the published bands of years prior to that. I use these results, with certain

cautions and caveats, to estimate *trends* in economic inequality over the years of this study.

Amount.	Number of Estates	Aggregate Net Value of Estates
ff		£
Under 500	2,222	446,378
500 and under 1,000	1,027	739,372
1,000 and under 2,000	898	1,291,913
2,000 and under 3,000	429	1,053,009
3,000 and under 4,000	227	787,971
4,000 and under 5,000	183	818,021
5,000 and under 7,500	257	1,584,280
7,500 and under 10,000	128	1,110,567
10,000 and under 15,000	128	1,566,531
15,000 and under		
20,000	61	1,043,319
20,000 and over	128	6,587,680
Totals	5,688	17,029,041

Table 4. Wealth distribution of deceased estates in NZ, 1930. Data source: NZ Official Yearbooks, 1932.

By plotting the cumulate number of estates against cumulate wealth of estates on a Lorenz curve for each year, I estimated the wealth share of the top 10% and 1% of deceased estates, and calculated the Gini coefficient for each year's set of deceased estates. This method has been used extensively in the UK for estimating long-run wealth trends (Atkinson, 1975). Its weaknesses are that it does not give information about the distribution of wealth among the living, and brackets out all the deceased whose estates are too small to have to be declared. However, over successive years it gives a good account of the *trends* in wealth inequality that are most likely to be reflected in the population as a whole (for a full discussion of this method and alternatives, see Atkinson, 1975). Because the boundaries between the wealth bands do not fall on the 10% and 1% margins, I used a method of congruent triangles, drawn between the values immediately above and below the 10% and 1% margins, to calculate the top 10% and 1% share.

The results for the wealth share of the richest 10% and 1% of estates for 1909-1943 are displayed in Figure 12. Although there is considerable fluctuation, there is a statistically significant downward trend for both sectors ($p = 1.76 \times 10^{-8}$ for the 10% share; $p = 2.45 \times 10^{-4}$ for the 1% share). The wealthiest 10%'s share reduces from 71.2% in 1905 to 59.1% in 1943, while the wealthiest 1%'s share reduces from 25.3% to 18.3%. This implies a steady erosion of the portion of wealth the richest people enjoyed in their last year of life. It seems reasonable to assume there was a similar downward trend among the living, even though the percentage shares may be different.



I calculated the Gini coefficient for each year's deceased estates by the standard method based on each year's Lorenz curve (Atkinson, 1975). The results are given in Figure 13, alongside the wealth shares of the richest 10%, for the years 1911-1947 (prior to 1911 the Yearbooks give the data spanning bands of years, which introduces inaccuracies).



Two important implications can be drawn from Figure 13. Firstly, the changes in top 10% wealth share track those of the Gini coefficient quite closely over most of the years (correlation coefficient R^2 =0.83), except for a shift in the early 1920s when the top 10% share fell to a new baseline about 10% lower than its pre-1920 value compared to the Gini. Piketty (2014) argues for using top 10% and top 1% shares as the better indication of inequality, since it focuses on the excess of the wealthy rather than the more amorphous issue of overall wealth distribution.

Secondly, both indices reach their peak in 1920 during the economic boom following WWI and both fall during the export price collapse of 1921. The top 10% share then

starts a gradual fall. Both then plunge sharply in 1930-1931, presumably due to losses of invested income after the share market crash. They recover in 1931-35, but then fall fairly steadily after the Depression ends, presumably due to the redistributive policies of the first Labour government (King, 2003).

A further investigation confirms that the top end of the wealth distribution was severely weakened in the 1930s. Figure 14 tracks the percentages of deceased estates that were at least equal to 200 times and 300 times the NZ average male wage in each year. This shifts the emphasis from the shape of the wealth distribution, to the real spending power of those at the top of the distribution. The percentage of estates worth 300 times the average wage began to reduce in the late 1920s, plunged after the share market crash, partially recovered, then reduced to around zero by the late 1930s. The percentage worth 200 times suffered a similar fate, reducing from 2% in 1929 to 0.64% in 1942.



Since a number of variables might have been influencing house prices in different ways, I performed a series of multivariate analyses, regressing nominal average house price (as the dependent variable) against different combinations of all the other variables in the study (as independent variables). Different combinations were limited to the years for which there was data for all the variables. The only variables that combined to predict average nominal house price reasonably well (p<0.05) were average male nominal wage and either the inequality index, i.e. the percentage of wealth owned by the richest 10%, or the Gini coefficient. Both gave almost identical results for predicted house price. The regression equations for these two cases are:

 $C = 4.357W + 49.96T - 3244 \quad (1)$

and

 $C = 4.357W + 35.67G - 2104 \quad (2)$

where *C* is the average Auckland nominal house price; *W* is the nominal average male wage; *T* is the percentage wealth share of the richest 10%; and *G* is the Gini coefficient expressed as a percent. The very low p-values for the independent variables (all below 0.002 in equation (1) and all below 0.0075 in equation (1)) indicate the two independent variables in each case are highly significant predictors of average nominal house price.

Figure 15 displays the actual price alongside the predicted price based on equation (1). Although the predicted price deviates markedly from the actual price in the Depression and early 1920s, when there were large year-to-year swings in inequality among deceased estates, it follows the same general shape. This suggests that nominal house prices were driven by a combination of wage levels and levels of inequality. While increasing wages tend to push house prices up, reducing inequality tends to pull them down.



Finally, figures are available from the Worldwide Inequality Database (WID; 2017) for the distribution of tax-declared income (as distinct from wealth) in NZ for most years in 1921-1945, given in Figure 16. The income share of the top-earning 10% reaches a peak of 38.4% in 1929, falls slightly until 1934, then falls steeply and continues a downward path, reaching 25.3% in 1945. The income share of the top 1% begins its fall later, from 10.4% in 1936 to 6.9% in 1945. Because there were gaps in the years covered by the data, it could not be used in the multivariate analyses outlined above.



By all these measures, inequality progressively reduced at least from 1930 onwards, with some indicators starting to fall earlier and some falling most steeply in later years. The spending power of the richest members of society reduced steadily, along with the number who had excessive spending power.

5. Discussion

The steadily reducing inequality in NZ from the mid-late-1920s onward might help explain the period of reducing real house prices that is not explained by reducing house size, namely the mid-1920s onward. Interesting comparisons can be made with other countries. There were macroeconomic trends of reducing economic inequality in many developed countries in the first half of the 20th century. Almost all such countries had seen high levels of economic inequality for centuries, reaching a peak early in the 20th century then starting to fall (Osberg, 2013; 2014; Piketty, 2014; 2015; 2015a; Piketty and Saers, 2014; Winters, 2015). The falling trend lasted until the late 1970s (Saez and Zucman, 2014). This theme is most clearly explored in depth by Piketty (2014) and is supported by large amounts of long-run data (WID, 2017; and see Milanovic, 2014). Examples are given in Figure 17.

Piketty noted that WWI, the depression and then WWII destroyed vast amounts of capital that were owned primarily by wealthy elites, while at the same time high progressive taxation and socialist-type policies in many developed countries prevented the re-accumulation of excessive wealth among this layer of society.

An interesting hypothesis, then, would be that real house prices (average nominal house price divided by average nominal wages) reduced in regions like Auckland at least in part because demand reduced, and that demand reduced because wealthy elites were less and less able to invest in houses as a safe haven for their wealth. As noted above, what is generally omitted in current discussion of house prices is that in the long term of history, houses have not generally been built in order for the people who buy them to live in them (Gurney, 2010). For most of recorded history, housing was owned by wealth elites who used it to house their serfs, slaves, workers or tenants, or for their own recreational or social needs (Clark, 1998; Winters, 2014). Such investment was 'as safe as houses', an expression that first appears in print in Hotten's Slang Dictionary in 1874 after a boom and bust in railways investment, when investors were being reminded that from 'ancient' times housing was always a safe investment.



High house prices relative to wages could therefore be a consequence of high levels of economic inequality. Fernandez and Aalbers (2016) have shown how, in recent times, excess accumulation of wealth at the top of the wealth pyramid leads to the 'financialization' of housing. Instead of being primarily a means of accommodation, housing becomes merely the real part of a vast array of abstract financial instruments. The wealthy compete against each other and against would-be owner-occupiers for greater and greater shares of this market, thus pushing up the price of houses. It should be noted, however, that housing has always been to some extent financialized. Mortgages were bought and sold in pre-18th century England (Clark, 1998). As Piketty (2014) points out, the annual income of Jane Austen's marriageable male characters was always estimated at 5% of the book value of their estates.

It is also interesting that, as wealth inequality has increased in NZ since the mid-1980s, housing affordability in Auckland has steadily reduced – as is the case throughout most of the developed world (see discussion in Section 1). The average Auckland house price in 2016 was some 18 times the average Auckland salary of \$61,360 (NZ.Stat, 2016) and 17 times the average NZ male wage of \$63,360 in 2017 (www.ENZ.org.nz).

Of course, there are many reasons for Auckland's current housing prices, as discussed in Section 1. It is here suggested that the issue of economic inequality needs to be added to the mix of factors in the discussion. In more general terms, the assumption that houses are built, sold and re-sold so that the buyers can live in them needs to be questioned, as this was the dominant scenario only for some 70 years of the 20th century. Failing to question this assumption may lead research to miss one of the most obvious reasons houses are becoming progressively less affordable for those who want to live in them.

6. Conclusions

In this study I attempted to fill a gap in long-run knowledge of Auckland nominal and real house prices by developing a time series for Auckland house prices from 1905 to 1942. The data source was classified advertisements in the 'Houses and land for sale' section of the NZ Herald for most years in that period. This was almost certainly the only comprehensive source of house price information available to prospective buyers of the time. A total of 3,288 advertisements rendered useful data. This gave time series of average and median house prices, numbers of rooms and average price per room, and some information on mortgage interest rates. It also enabled the geographical development of 'Auckland' to be tracked as outlying areas were incorporated into it and more central areas were enclosed by urban sprawl and built upon.

I also developed time series for the NZ CPI, NZ average rent, NZ average wages and house building costs from data in NZ Official Yearbooks of the period. I checked these for credibility by comparison with parliamentary papers, wage court decisions and reports regarding wages in a variety of newspapers of the period.

I used the long-run trend of the average NZ male wage as a proxy for the long-run trend of wages of Auckland households, as the proportionate changes over time in both are highly likely to be about the same. I used average rather than median nominal house price in the analysis as no figures were available for median wages. The average nominal selling price of the houses advertised was most likely lower than the advertised asking price, but this is unlikely to have significantly affected the proportionate changes through the years.

I used data from the Yearbooks on the values of deceased estates to develop proxies for long-run trends in NZ-wide wealth inequality. This included percentage share of total wealth held by the richest 10% and 1% of estates; the Gini coefficient for estates; and the real (wage-adjusted) wealth of the richest estates.

The parameters of average nominal house price, average male wage, CPI, building cost and (post-1920) rent followed similar snaking trajectories from 1905 to 1942. However, on a proportionate basis average nominal house price reduced steadily and persistently in relation to all these other parameters, including, surprisingly, the building cost. I defined the 'real average house price', for the purposes of this study, as the average house price divided by the average annual male wage. This reduced steadily, falling to 46% of its 1905 value by 1942. In the years up to the mid-1920s this reduction may be partly explained by a reduction in average number of rooms per house up to that time. Beyond that time, however, it was not explained by changes in the CPI, the building cost, average wage rates or rent.

The analysis of trends in wealth distribution showed that economic inequality steadily decreased. The top 10% and 1% of estates' share of total estate wealth declined continually throughout the period. The Gini coefficient reduced markedly from about 1930 onwards. The real spending power of the richest estates plummeted during the 1930s and remained low into the early 1940s. This trend of reduction in wealth inequality could explain the steady reduction in real house price from the mid-1920s onwards. My hypothesis is that the reduced spending power of the richest sections of society reduced the demand for property bought as a financial asset, and that reduced demand led to lower real prices.

Further, at the time a major cultural change was underway in the English-speaking world and to some extent in other western countries: housing was becoming increasingly regarded as a good that those who lived in would and should own. Historical studies show this was not the dominant cultural expectation regarding housing, at least in Britain, prior to the 20th century. I suggest this cultural shift needs more attention in modern studies of housing affordability. We should not be surprised that the rich are buying up increasing numbers of houses, but rather that for 70 or so years of the 20th century they did this to a far lesser extent.

A further observation is that the real price of Auckland housing was steadily reducing at the same time as economic inequality was reducing in much of the western world, especially Britain, from which most of NZ's immigrants came (King, 2003). In the very long run, it seems real house prices in Auckland continued to fall after the study period, bottoming out in the 1950s and remaining low until the late 1970s, before beginning their current climb to about 17 times the average Auckland salary. This runs fairly parallel to the long-run reduction and then recent increase in economic inequality in NZ and most of the western world.

Wealth elites the world over are continually looking for safe havens to park their fortunes. Blocking overseas investors from buying houses in NZ might solve part of the problem. However, NZ now has its own wealth elites as well as well-endowed baby-boomers who are also looking for investment options. It may be that an element needed to help solve the housing affordability crisis is to reduce wealth inequality by introducing deeply progressive tax policies on both income and wealth, such as are suggested by Piketty (2014).

(7,744 words)

References

Acemoglu D, Robinson J (2012) Why Nations Fail: The origins of power, prosperity, and poverty. New York: Crown Business.

Atkinson A (1975) The Distribution of Wealth in Britain in the 1960s: The Estate Duty Method Reexamined. In Smith J (Ed) The Personal Distribution of Income and Wealth, pp. 277-328. NBER. Now published online at <u>http://www.nber.org/books/smit75-1</u>

Bourassa S, Shi S (2016): Understanding New Zealand's decline in homeownership. Housing Studies DOI: 10.1080/02673037.2016.1228851.

Bouyon S (2015) Recent trends in EU home ownership. European Credit Research Institute, Commentary No. 15.

Cerutti E, Dagher J, Dell'Ariccia G (2017) Housing finance and real-estate booms: A cross-country perspective. Journal of Housing Economics 38 (2017) 1–13.

Chao C, Yu E (2015) Housing Markets with Foreign Buyers. Journal of Real Estate Finance and Economics 50:207–218.

Clark G (1998) Land Hunger: Land as a Commodity and as a Status Good, England, 1500–1910. Explorations in Economic History 35: 59–82.

Clarke S, Corlett A, Judge L (2016) The housing headwind: The impact of rising housing costs on UK living standard. London: Resolution Foundation.

Eaqub S. Eaqub S (2015) Generation Rent: Rethinking New Zealand's Policies. Wellington: BWB Texts.

Fernandez R, Aalbers M (2016) Financialization and housing: Between globalization and Varieties of Capitalism. Competition & Change 20(2): 71–88.

Fernandez R, Hofman R, Aalbers M (2016) London and New York as a safe deposit box for the transnational wealth elite. Environment and Planning A (in press) 1-19.

Fraser P, Hoesli M, McAlevey L (2007) House Prices and Bubbles in New Zealand. University of Geneva Report. Avalailable at <u>http://archive-ouverte.unige.ch/unige:5735</u> accessed 03 June 2017.

Gallent N (2016) Investment, global capital and other drivers of England's housing crisis. Journal of Urban Regeneration & Renewal 9(2): 122-138.

Gurney C (2010) Pride and Prejudice: Discourses of Normalisation in Public and Private Accounts of Home Ownership: Housing Studies 14(2): 163-183.

Gurran N, Phibbs (2014) Are Governments Really Interested in Fixing the Housing Problem? Policy Capture and Busy Work in Australia. Housing Studies 30(5): 711-729.

Hoffman P, Jacks D, Levin P, Lindert P (2002) Real Inequality in Europe since 1500. The Journal of Economic History 62(2): 322-355.

Kendall E (2016) New Zealand house prices: a historical perspective. RESERVE BANK OF NEW ZEALAND, BULLETIN, Vol. 79, No. 1.

King M (2003) The Penguin History of New Zealand. Auckland: Penguin.

Knoll K, Schularic M, Steger T (2014) No Price Like Home: Global House Prices, 1870 – 2012. Working paper, University of Berlin. JEL Classification: N10, 010, R30, R40.

Milanovic B (2014) The Return of "Patrimonial Capitalism": A Review of Thomas Piketty's "Capital in the Twenty-First Century". Journal of Economic Literature 52(2): 519-534.

Murphy L (2011) The global financial crisis and the Australian and New Zealand housing markets. Journal of Housing and the Built Environment 26(335):

Murphy L (2013) 'Houston, we've got a problem': The Political Construction of a Housing Affordability Metric in New Zealand. Housing Studies 29: 893-909.

Murphy L (2016) The politics of land supply and affordable housing: Auckland's Housing Accord and Special Housing Areas. Urban Studies 53(12): 2530-2547.

NZ Herald/Barfoot and Thomson (2017) Auckland residential rents up as landlord costs spiral: Barfoots. HZ Herald 30 October, 2017.

OECD (2016) OECD Analytical House Price database. Available online at <u>https://stats.oecd.org/Index.aspx?DataSetCode=HOUSE_PRICES</u> accessed 02 June, 2017.

Osberg L (2013) Instability implications of increasing inequality: Evidence from North America. Economic Modelling 35: 918–930.

Osberg L (2014) Can Increasing Inequality Be a Steady State? *OECD Statistics Working Papers*, 2014/01, OECD Publishing. <u>http://dx.doi.org/10.1787/5jz2bxc80xq6-en</u>

Piketty T (2014) Capital in the Twenty-First Century (Translated from the French by Arthur Goldhammer). Cambridge (Mass): Belknapp-Harvard University Press.

Piketty T (2015) Putting Distribution Back at the Center of Economics: Reflections on Capital in the Twenty-First Century. Journal of Economic Perspectives 29(1): 67-88.

Piketty T (2015a) About *Capital in the Twenty-First Century.* American Economic Review: Papers and Proceedings. 105(5):1-6.

Piketty T, Saez E (2014) Inequality in the long run. Science 344(6186): 838-843.

Stebbing A, Spies-Butcher B (2016) The decline of a homeowning society? Asset-based welfare, retirement and intergenerational equity in Australia, Housing Studies, 31:2, 190-207.

Thorns D (2009) Housing booms and changes to New Zealand housing affordability: the policy challenge, Journal of Asian Public Policy, 2(2): 171-189.

Walks A (2012) Canada's Housing Bubble Story: Mortgage Securitization, the State, and the Global Financial Crisis. International Journal of Urban and Regional Research 38(1): 256–284.

Yates J (2008) Australia's housing affordability crisis. The Australian Economic Review 41(2), 200–214.