

REGIONAL DIFFERENTIAL WEALTH EFFECT ON HOME VALUE: A CROSS-SECTIONAL ANALYSIS

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ABSTRACT

Home prices are regarded as an important determinant for consumption and considered to be a leading indicator for the economy. However, homebuyers' evolving preferences on new or existing characteristics can have different impacts on housing price for different homebuyers differently. Thus, regional home price differences may be due to differential effect in homebuyers' preference that is reliant on individuals' wealth barometer. In general, housing market in a region with higher median home values would also have a higher household income. This gives credence to the proposition that region with higher percentage of high income earners are instrumental for elevated home price. The unequal distribution of economic pulsation is in part dependent on the concentration of wealth that is different in different geographic locations. It is expected that housing prices are determined by income and therefore wealth, but it is not certain that there is a differential effect on home value due to different regions. Thus, the objective of this study is to understand the dynamic relationships of the wealth effect and regional effect on the home value. In particular, statistically significant relationship between home value and wealth factor dissimilarity due to locational differences are observed. Moreover, after controlling for population size and unemployment rate, wealth factor impacts the value of the house positively across the regions.

INTRODUCTION

Housing market literature has presented a variety of housing characteristics to explain home value. Regression analysis is typically applied to identify the direction of the relationship between home value and these housing characteristics. Predicting home value can be daunting as homes in general contain countless physical attributes that influence their values and can include lot size, square footage, number of bedrooms, number of bathrooms, and other characteristics (Zietz, Zietz, & Sirmans, 2008). Popularity for this avenue of study has been highlighted by Sirman et al.'s (2005) review of studies that listed age of home and square footage to be the structural features frequently found to affect the selling price of a home. Amenities such as fireplaces, central air-conditioning, and patios were also found to influence home price positively. Neighborhoods' attributes both natural and manmade were also major components for home valuations. School districts, access to local parks and recreations have positive impacts on housing prices (Clark & Herrin, 2000; Downes & Zabel, 2002; Figlio & Lucas, 2004; Reback, 2005; Seo & Simons, 2009; Garcia, Montolio, & Raya, 2010). However, homebuyers' evolving

preferences for particular characteristics continues and thus new or existing characteristics can have different impacts on housing price at different points in time and for different homebuyers differently (Malpezzi, 2003). As a result, home characteristic studies continue to be published to maintain a contemporary understanding of predictors' behavior on the home price. Other additions to the home value literature consider how differences in regional home price due to different geographic locations can create a differential effect in homebuyers' preference.

Home prices are regarded as an important determinant for consumption (Case, Quigley, & Shiller, 2005) and considered a leading indicator for the health of the economy. This is a serviceable surrogate variable for understanding the immensity of consumerism in the U.S. because trends in home price are a simple tool to infer economic health by city, state, region, and country. Other types of buying decisions made by individual consumers are less desirable indicators because the data is more difficult to capture as choices are almost limitless in number and occur for anyone homeowner in a variety of locations. Moreover, frequent change in consumer buying trend makes buying behavior for most consumer goods an unreliable representation of economic health across different geographic regions and time periods. In general, macroeconomic variables determining housing price on a regional scale are preferable for those seeking determinants of the U.S. economy's health, while microeconomic variables are preferable to those trying to explain local home prices and local real estate markets. While macroeconomic studies are less common, they can be a crucial linkage to understand the health of the economy.

Researchers have proposed many different models to predict the value of housing across multiple studies, where the relationship between housing price and other variables were separately analyzed by geographic locations, including national, regional, state, and metropolitan areas (Case et al., 2005; Zhu, Füss, & Rottke, 2013; Fullerton, Fierro, & Donjuan-Callejo, 2009; Fullerton & Villalobos, 2011; Holmes, Otero, & Panagiotidis, 2011). Sirmans et al. (2005) suggested the positive effect square footage had on selling price was similar in some of the multi-state geographic regions (Census Bureau designated regions of the U.S.: Northeast, Midwest, Southeast, and West). They also discussed that lot size, fireplace, central air-conditioning, basement, garage, and perceived school quality have a positive relationship with housing price across all regions.

Home price in this literature has represented as an approximation of a home's actual value, and on a larger scale the median home price by city, state, or region is representative of the overall home value within that market. Changes in income and consumer sentiment are the major determinants for the fluctuations in housing price (Boelhouwer, Haffner, Neuteboom, & de Vries, 2004; Rouwendal & Longhi, 2008). Consumption has been found to respond to changes in home prices, but consumption effects were weaker for households with unused borrowing capacity (Campbell & Cocco, 2007). A subsequent study by Algieri (2013) found housing prices were most sensitive over the long term to income changes, population, and inflation rate. Riley (2012) observed that among all types of homes, expensive houses exhibited more consistent price appreciation and strong relations to changes in regional home values. This

gives credibility to the proposition that regions with higher percentage of high income earners experience greater home price appreciation and have a stronger regional economy. These relationships were confirmed, in part, because homes were clustered together in locations, states, and regions by home value. As an example, homes with lower median price are concentrated in areas that are geographically separated from homes with higher median prices. Therefore, we expect regions at a lower median home price to contribute less to the GDP than regions with higher median home price. This variable (median home price) distills regional spending habits and wealth accumulation. Similarly, consumer spending habits and wealth are strongly correlated with home values. In other words, markets (local and regional) with higher median home values would also have a higher household income. This effect has been observed on a localized scale where spending habits are different in low income neighborhoods (Sirmans & Macpherson, 2003; Feldman, 2002), with lower valued homes that tend to have more fast food (low priced) restaurants (Block, Scribner, & DeSalvo, 2004). In addition, lower income neighborhoods have more liquor stores as observed by LaVeist and Wallace (2000), while Morland et al. (2002) found wealthier neighborhoods have more supermarkets and more “heart-healthy” foods. To this end, Kenny and Reinke (2011) found that educational attainment, household income, and home values predicted neighborhood wealth.

Government intervention encourages individuals to value home ownership as a way to improve local, regional, and national economy, which suggests a need for better understanding of home price predictors. Specifically, government incentives (such as, mortgage debt tax deductions) were designed to encourage homeownership (Poterbal & Sinai, 2011) as a proactive policy built on the premise that growth in the rate of homeownership also increases the wealth of the nation. In addition, the negative impacts of short-term regional economic instability would have less impact on the national economy as the homeownership incentive encourages homeowners to retain homes and promote stability in communities and financial markets (Rosenthal, 2008). Homeownership accounts for a sizeable number of jobs regionally in terms of maintenance, modification, and insurance, but also nationally through the homebuilding, realty, and financial industries. In other words, these incentives attempt to weaken the relationship between disruptions in short-term homeowner income and home values. Campbell and Sances (2013) observed that at the state level decline in home value and personal income impacts state’s budget greatly. During the recent recession, budget gaps were larger in states where personal income and home values declined the most, and this resulted in altered spending behavior, which in turn drove up the demand for social services and thus created larger fiscal gaps. Thus, the relationship between spending behavior and home values connection to tax revenues highlight another interconnected path of home prices’ to the economy. In general, per capita income, unemployment, and interest rates are key determinants for short-term fluctuations in consumer spending on housing. Thus, fluctuations in these factors also create changes in housing prices. Therefore, when income increase, so do property prices and its value; conversely when earnings drop, so do housing prices and its value. For most US households, the home is the most important asset (Davidoff, 2003). However, the results of policies encouraging homeownership

incentives are far from ideal as the benefit to low-income households has been inconsistent (Duda & Belsky, 2002; Turner & Smith, 2009; Riley, 2012). On a national scale, locations where low-income homeowners are heavily concentrated experience perpetually low median home values and weaker home price appreciation compared to high-income locations.

The unequal distribution of economic pulsation is in part dependent on the concentration of human capital in different geographic locations. These concentrations of human capital also tend to reflect similar wealth concentrations in those regions. Kenny and Reinke (2011) found populations with more human capital, in terms of the population's level of education attainment, spent more on housing and likely put upward pressure on home price in those locations. While human capital is an important predictor of eventual earning power and purchasing power, such that a larger concentration of educated individuals would increase buying power and thus increase home prices, may also construct a confounding effect of education with wealth on the home value. Nonetheless, high income earners disproportionately drive housing prices upward, because of their access to better credit and less income/employment volatility. Therefore, relatively richer neighborhoods are more likely to become a new part of a city than poorer neighborhoods (Kenny & Reinke, 2011) and this increases home value as others aspire to live in these locations and creates a lasting effect. Supporting research has found higher income earners have more predictable homeownership behavior, as 85% of high-income households have homeownership. While, low-income households only experience a 50% homeownership rate (Turner & Smith, 2009). This further demonstrates characteristics of specific sub-populations that are effective in determining the regional fluctuations in home values. The primary implication of these variations is that the impact of the wealth effect is not equal for all regions, and therefore, policymakers should adjust and control relevant factors to understand the differential wealth effect.

Thus, the objective of this study is to understand the dynamic relationships of the wealth effect and regional effect on the home value. In particular, the relationship between home value and wealth factor dissimilarity due to locational differences warrant our attention. Based on the typical research study, it may not be surprising to anticipate that housing prices are determined by income and therefore wealth, but it is not certain that home value can have a differential effect due to regional differences. Therefore, undertaking this research analysis may help determine the dynamic relationship between these factors. For that reason, we first examine the relationship between home value and wealth factor for each region. This will provide us the general direction of the relationship between home value and wealth. Knowing the direction of this relationship, we then combine the regions together in one model to understand the comparative differential effect of wealth due to the different regions considered in this paper. This will enable investors and policymakers to determine how home value responds to the wealth disparity depending on the region they belong.

DATA DESCRIPTION AND RESEARCH METHODOLOGY

For our analysis, we have obtained data from the US Census. The data includes “median home value” for each fifty states among other factors (discussed below) for the year 2000. In order to determine the effect on home value, we have identified and applied several socio-economic factors as independent variables in the models. We have also considered regional effect on the home value as the regions are defined by the US Census (see, regions descriptions below). All the factors used for this research analysis were obtained from the same source to maintain the data reliability and consistency. This is the only year (year 2000) that US Census provided all these various socio-economic factors in their report.

Regions

As mentioned earlier, data will be divided and analyzed into four different regions.

List of States by Region			
Northeast Region (Region 1)	Midwest Region (Region 2)	South Region (Region 3)	West Region (Region 4)
Maine	Ohio	Delaware	Montana
New Hampshire	Illinois	Maryland	Idaho
Vermont	Indiana	Virginia	Wyoming
Massachusetts	Michigan	West Virginia	Colorado
Rhode Island	Wisconsin	North Carolina	New Mexico
Connecticut	Minnesota	South Carolina	Arizona
New York	Iowa	Georgia	Utah
New Jersey	Missouri	Florida	Nevada
Pennsylvania	North Dakota	Kentucky	Washington
	South Dakota	Tennessee	Oregon
	Nebraska	Alabama	California
	Kansas	Mississippi	Alaska
		Arkansas	Hawaii
		Louisiana	
		Oklahoma	
		Texas	

To explore the relationship with median home value (in US dollars), we concentrated only on the following socio-economic factors: percentage of individuals with bachelor’s degree or higher, the unemployment rate, the total population, median earnings of male, median earnings of female, and the percentage of households with income greater than \$100,000 (which is considered as wealth indicator). In addition, we have also explored other factors, such as, GDP, per capita income, rental cost, monthly maintenance expenses, etc. in our preliminary analysis (results not shown). The model will be constructed using these above mentioned socio-

economic factors with the data obtained from US Census of year 2000. The analysis will be done region-wise as the regions are determined by US Census based on their geographic locations and also a combined analysis for all regions together.

TABLE-1A: Summary Statistics of Region 1 (Northeast).					
Variables	N	Mean	Std Dev	Minimum	Maximum
Home value (Median)	9	138400	32160	97000	185700
BA + %	9	27.86667	3.66776	22.40000	33.20000
Unemployment Rate	9	5.21111	0.99177	3.80000	7.10000
Earnings-M	9	39399	5122	32372	46368
Earnings-F	9	28963	3454	24251	33318
Wealth (Income_G_100K)	9	13.98889	5.03474	7.10000	21.30000
Population	9	5954931	6315772	608827	18976457

TABLE-1B: Summary Statistics of Region 2 (Midwest).					
Variables	N	Mean	Std Dev	Minimum	Maximum
Home value (Median)	12	98075	18440	74400	130800
BA + %	12	22.83333	2.40807	19.40000	27.40000
Unemployment Rate	12	4.72500	0.72504	3.50000	6.00000
Earnings-M	12	35696	4002	29677	41897
Earnings-F	12	25290	2601	20893	29106
Wealth (Income_G_100K)	12	9.43333	2.67525	5.70000	14.40000
Population	12	5366065	4014973	642200	12419293

Methodologies and Factors

In this study, we explore the association of home value with a variety of socio-economic factors, such as, percentage of individuals who attained higher education (bachelor's degree or higher), the unemployment rate, median earnings of male, median earnings of female, percentage of households with income greater than hundred thousand dollars (a measure for wealth) after controlling for the size of the population. Other wealth characteristics, such as, GDP of the state, number of automobiles owned, etc. may be relevant in estimating the housing value. However, they also impact the association of other wealth factors and, therefore, create a confounding effect and thus offset each other in its outcome. For these reasons, they were not considered in this study. Public policy constraints and subsidies that include all types of regulations and taxes also affect the home value through land availability by increasing or decreasing the homeownership incentive. In addition to the land availability or scarcity, one must also consider the influence of regions (location) and the presence of resources that the region can provide. They generate appealing differences between locations and thus create differences in price value. Similarly, mortgage rate that increases or decreases the purchasing power has influence on the price of a home.

TABLE-1C: Summary Statistics of Region3 (South).					
Variables	N	Mean	Std Dev	Minimum	Maximum
Home value (Median)	16	96356	22889	70700	146000
BA + %	16	21.35625	4.58330	14.80000	31.40000
Unemployment Rate	16	5.83125	0.90386	4.20000	7.40000
Earnings-M	16	33666	3304	29784	41640
Earnings-F	16	24667	3185	21154	32155
Wealth (Income_G_100K)	16	9.56250	3.72413	5.00000	18.10000
Population	16	6229048	5259687	783600	20851820

In addition, human capital (education) plays an important role on the purchasing power. However, the factor that influences the home value most is the earnings or per capita income. Therefore, the wealth factor (percentage of households with income greater than hundred thousand dollars) is considered as an external factor in our study to observe any wealth dependent effect on the home value. Median male earnings and median female earnings were also analyzed in our study to discern how home value increases with higher per capita wealth. However, the increase of price (value) of a house may be further explained through the effect of other relevant factors. Such as, increase in population size may decrease the land availability and

thus increase the value of the house. Therefore, we control for the population size. Similarly, the unemployment rate was used to control for the differential effect of the health of state's economy. Thus, data on these factors that are stated above were collected for each state from the census bureau and analyzed using associative models. Our research considers modeling the housing relationship of median home value (in dollars) with respect to the wealth effect. In particular, we would like to observe if an increase in home value is associated with the percentage increase in wealthy individuals.

TABLE-1D: Summary Statistics of Region 4 (West).					
Variables	N	Mean	Std Dev	Minimum	Maximum
Home value (Median)	13	148869	49531	96600	272700
BA + %	13	24.79231	3.45120	18.20000	32.70000
Unemployment Rate	13	6.21538	1.16107	4.30000	9.00000
Earnings-M	13	36147	3477	30503	41257
Earnings-F	13	26594	3551	20914	31722
Wealth (Income_G_100K)	13	11.33077	3.89987	5.60000	17.30000
Population	13	4861379	8889189	493782	33871648

To observe the association between the home value and the socio-economic factors, initially we observe the bi-variate correlations (results not reported) to examine the direction of the association and the strength of the relationships between factors. Many of these socio-economic factors were statistically significantly correlated with home value. However, they were also highly correlated among themselves due to the fact that they measured the same income (wealth) effect. We then regress home value (median) on the predictors to observe the associations in the housing market. In addition to the inclusion of primary wealth factor, we have also controlled for population size and unemployment rate. As, for example, an increase in population size (more/less) may increase the demand of land and thus result in an increase in home value. Thus, these relevant factors were included during the estimation process of the regression model to control for the proper external effect. In general, it is assumed that there is a difference in home value between good economic condition and difficult economic condition in the process of determining the value of the home and, therefore, the unemployment rate is introduced into the model as an independent variable.

TABLE-1E: Summary Statistics of All Regions.					
Variables	N	Mean	Std Dev	Minimum	Maximum
Home value (Median)	50	117990	39822	70700	272700
BA + %	50	23.77600	4.28050	14.80000	33.20000
Unemployment Rate	50	5.55400	1.09082	3.50000	9.00000
Earnings-M	50	35830	4252	29677	46368
Earnings-F	50	26091	3473	20893	33318
Wealth (Income_G_100K)	50	10.78800	4.07619	5.00000	21.30000
Population	50	5616997	6185580	493782	33871648

To this end, multiple regression models were run using SAS software (see, SAS/STAT User's Guide, 1993) for housing value on several different factors. These analyses of socio-economic factors are to observe the differential effect on the value of houses due to different regions. This measure is designed to test the hypothesis that home value differences are due to differences in wealth depending on the region.

Specification of the regression model for each region is of the following form:

$$Home_Value = \beta_0 + \beta_1 Wealth + \beta_2 Population\ Size + \beta_3 Unemployment\ Rate + \varepsilon \quad (1)$$

Specification of the regression model for the whole nation is of the following form:

$$Home_Value = \beta_0 + \beta_1 Wealth + \beta_2 Region2 + \beta_3 Region3 + \beta_4 Region4 + \beta_5 Population\ Size + \beta_6 Unemployment\ Rate + \varepsilon \quad (2)$$

Where:

Home Value: Median home value (in US dollars)

Wealth (Income_G_100K): Percentage of households with income greater than hundred thousand dollars

Population Size: Total population of the state

Unemployment Rate: Unemployment rate of the state

BA+ %: Percentage of Bachelor's degree or higher in the state

Region1: Northeast Region (1, if a state in northeast region, 0 for others)

Region2: Midwest Region (1, if a state in midwest region, 0 for others)

Region3: South Region (1, if a state in south region, 0 for others)

Region4: West Region (1, if a state in west region, 0 for others)

Earnings-M: Median earnings of male residents in the state

Earnings-F: Median earnings of female residents in the state

An increase in either male earnings or female earnings should increase the home affordability and thus increase the home value in that state. Similar effect is expected for an increase in education (human capital). As unemployment rate increases, the total purchasing power decreases and therefore, the home value (in dollars) is expected to decrease. However, these relationships are not independent. To test these hypotheses in our study we have employed associative models in our analysis.

TABLE 2A: Regression results of Home value (median) in Region 1 (Northeast).

Analysis of Variance					
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	3	7007505144	2335835048	9.22	0.0176
Error	5	1266714856	253342971		
Corrected Total	8	8274220000			
R-Square	0.8469		Adj R-Sq	0.7551	

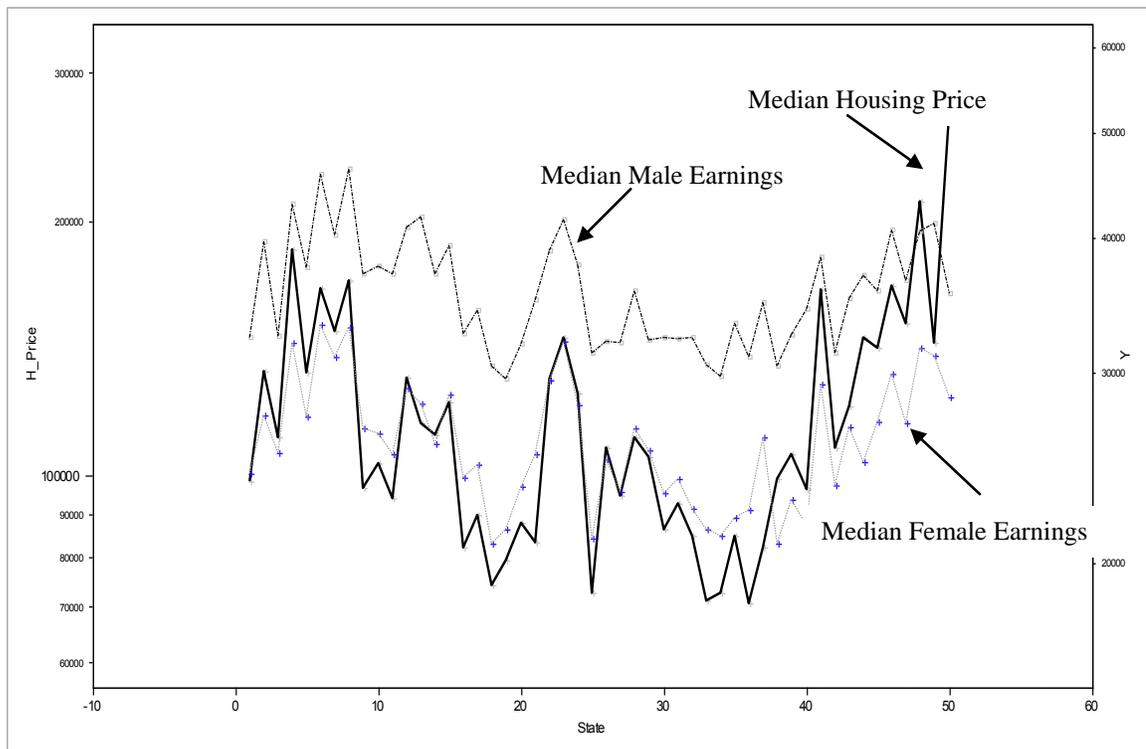
Parameter Estimates					
Variables	DF	Parameter Estimates	Standard Error	t Value	Pr > t
Intercept	1	65373	45517	1.44	0.2104
Wealth	1	6027.50276	1167.22955	5.16	0.0036
Population Size	1	-0.00022520	0.00154	-0.15	0.8894
Unemployment Rate	1	-1909.40427	9777.58178	-0.20	0.8529

STATISTICAL ANALYSIS

Descriptive statistics for the various measures of factors are calculated and reported in Table-1A through Table-1D for four regions and in Table-1E for the whole nation. West region has the highest average home value (\$148,869); whereas south region has the lowest average home value (\$96,356) as observed in Table-1D and Table-1C respectively. Relatively larger standard deviations \$39,822 (see, Table-1E) of housing value with the highest value being \$272,700 in the west region, (see Table-1D) and lowest \$70,700 in South region (see Table-1C) do indicate a considerable fluctuation in the home values in different states and thus, indicate much variations in these regions. In addition, percentage of wealth as determined by “percentage of households income greater than 100K” ranges from 5.0 to 21.3 (see Table-1E) reflect substantial purchasing power differences between the states and therefore the regions. In particular, south region has the lowest wealth factor (5.0) and that may be the reason for lowest

home value generated in that region. Given this scenario, we would like to test the hypothesis that the higher the wealth factor (as measured by percentage of household income greater than 100K) the higher the home value. Therefore, we expect a positive relationship between home value and wealth. Higher level of education (percentage of individuals with bachelor’s degree or higher) is found to be highly correlated with personal income (results not shown) which also impact housing value. In a similar context, there are also visible similarities and differences in the association between home value vs. median female earnings and median male earnings. In particular, median female earnings are more closely associated with the home value compared to median male earnings as can be seen in Graph-1 and thus exhibiting an important role in home value determination. On the other hand, there is a visible earnings difference (about \$10,000) between male and female earners in each region (see, Table-1A-- Table-1D).

Graph-1: Plot of median Home value vs. median Female and median Male Earnings by State.



Left Scale: + — H_Price
 Right Scale: ■ - - - Earn_M + Earn_F

In addition, simple pair-wise correlation analysis among the variables, reveal that home value is positively impacted by both male earnings and female earnings with a comparatively higher correlation value for female earners. However, the impact on home value is much more pronounced for the wealth factor than any other factors considered. Unemployment rate has opposite and negative impact on the home value though not statistically significant. Average wealth factor is similar in value for the “Northeast” and “West” regions (see Table-1A & Table-1D) and much higher compared to “Midwest” and “South” regions (see Table-1B & Table-1C). Therefore, we expect a negative relationship between the home value and “Midwest” and “South” regions in relation to “West” (see Table-2E), and thus in agreement with our hypothesis of differences in housing value is also due to locational differences that may be dependent on wealth differentials.

TABLE 2B: Regression results of Home value (median) in Region 2 (Midwest).					
Analysis of Variance					
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	3	3283647256	1094549085	19.17	0.0005
Error	8	456695244	57086906		
Corrected Total	11	3740342500			
R-Square	0.8779		Adj R-Sq	0.8321	
Parameter Estimates					
Variables	DF	Parameter Estimates	Standard Error	t Value	Pr > t
Intercept	1	48641	24808	1.96	0.0856
Wealth	1	5759.51024	1455.89593	3.96	0.0042
Population Size	1	0.00080989	0.00131	0.62	0.5543
Unemployment Rate	1	-1956.26658	5245.56134	-0.37	0.7189

Results of multiple regression analyses are reported in Table-2A through Table-2E. All these models fit well and are statistically significant in determining the home value. As reported coefficient of determinations (R^2) are 0.85, 0.88, 0.90, and 0.72 for the Northeast, Midwest, South, and West regions respectively, with highly significant F value (see, Table-2A - Table-2D). In addition, an overall model for all four regions combined also produced a statistically significant model with R^2 of 0.81 (see, Table-2E). Results indicate that West region comparative to Midwest or South regions impact the housing value more positively (see, Table-2E). As, for example, home value for a state in the West region is \$30,944 higher on average (see, Table-2E), which is also depicted in the summary statistics of home value (see, Table-1D and Table-1C).

However, wealth factor impacts housing value positively across the regions. Analyses also reveal that home value increases by about \$6,000 for each additional increase in percentage of households whose income is greater than 100K for three of the four regions, namely Northeast, Midwest, and South regions (see, Table-2A - Table-2C). However, the wealth factor effect for the West region on the home value is almost twice (\$11,253) as much compared to other three regions (see, Table-2D). Unemployment rate had a negative effect on the home value; however none of the observed effects of unemployment rate were statistically significant.

TABLE 2C: Regression results of Home value (median) in Region 3 (South).

Analysis of Variance					
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	3	7105020489	2368340163	37.71	<.0001
Error	12	753738886	62811574		
Corrected Total	15	7858759375			
R-Square	0.9041		Adj R-Sq	0.8801	

Parameter Estimates					
Variables	DF	Parameter Estimates	Standard Error	t Value	Pr > t
Intercept	1	61092	25642	2.38	0.0346
Wealth	1	5647.03051	833.22694	6.78	<.0001
Population Size	1	-0.00086164	0.00040722	-2.12	0.0559
Unemployment Rate	1	-2292.47218	3331.20671	-0.69	0.5044

Therefore, in addition to the wealth characteristics, locational differences also affect the housing value differently. Specifically, after controlling for population size and unemployment rate, wealth factor positively impacts the value of a home in each of the regions. Another interesting observation is that the unemployment rate impacted home value differently for different regions (though not statistically significant). As for example, each additional increase in the unemployment rate in the West region impacted the home value negatively three times (see, Table-2D) as much as each of the other three regions. Therefore, after controlling for unemployment rate, this study suggests that the home value is wealth dependent and more importantly the wealth effect is significantly substantial for some of the regions.

TABLE 2D: Regression results of Home value (median) in Region 4 (West).

Analysis of Variance					
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	3	21300694459	7100231486	7.85	0.0070
Error	9	8138733233	904303693		
Corrected Total	12	29439427692			
R-Square	0.7235		Adj R-Sq	0.6314	

Parameter Estimates					
Variables	DF	Parameter Estimates	Standard Error	t Value	Pr > t
Intercept	1	63900	49863	1.28	0.2320
Wealth	1	11253	2627.01290	4.28	0.0020
Population Size	1	-0.00008398	0.00112	-0.07	0.9419
Unemployment Rate	1	-6778.74284	7753.28804	-0.87	0.4047

CONCLUSION

In this study, we examine the macro characteristics based analysis that affect the home value to understand the complex nature of housing market dynamics both nationwide and regionally. In particular, statistical significance and magnitude of wealth factor and locational differences on the “home value” is explored. As expected, after controlling for population size and unemployment rate, a higher percentage of wealth is found to be instrumental in affecting the housing value positively and significantly across the regions and, therefore, depicting one of the most important macroeconomic factors’ influence on the housing market dynamics. Basic understanding of the relationship of socio-economic factors such as, financial wealth, housing values, and consumption provides a future platform for evaluating economic policy and forecasting economic activity. To this point the observed willingness to purchase higher priced homes by wealthier individuals produces upward price pressure on homes. Changes in house price have a significant impact on gross metropolitan product growth (Miller, Peng, & Sklarz, 2011) as these variables behave differently across different regions. Forecasts about regional trends become possible when similar behavior by the wealthier segment of the population is observed across regions; it may also be possible to infer the performance of the national economy as well. Spending habits of these wealthier individuals are more susceptible to changes in economy and income (Salotti, 2012). For example, wealthy individuals are more likely to pay premium prices for homes with socially desirable property names during stronger economic conditions than weak economic conditions (Zahirovic-Herbert & Chatterjee, 2011). Future

research should examine the wealth effects carefully as high net worth households may behave differently than high income individuals that may have a lower percentage of net worth tied to financial assets (Guo & Hardin, 2014). Overall, a small portion of the home buyer population in these findings proved to be instrumental in influencing home prices, and future research should identify its operational ability on the economic impact.

TABLE 2E: Regression results of Home value (median) in All Regions.

Analysis of Variance					
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	6	63030930912	10505155152	30.78	<.0001
Error	43	14674374088	341264514		
Corrected Total	49	77705305000			
R-Square	0.8112		Adj R-Sq	0.7848	

Parameter Estimates					
Variables	DF	Parameter Estimates	Standard Error	t Value	Pr > t
Intercept	1	45484	19828	2.29	0.0267
Wealth	1	7164.61674	784.96754	9.13	<.0001
Region2 (Midwest)	1	-8367.66898	9022.43587	-0.93	0.3589
Region3 (South)	1	-9456.45318	8572.80316	-1.10	0.2761
Region4 (West)	1	30944	8728.44855	3.55	0.0010
Population Size	1	0.00000953	0.00048800	0.02	0.9845
Unemployment Rate	1	-1413.43847	2964.80005	-0.48	0.6360

Thus, these results add another dimension in this field of research concerning the importance of the wealth factor on the home value that has a regional differential effect. In addition, the magnitude of the wealth factor's impact on the home value is location dependent. Specifically, after adjusted for population size and unemployment rate, wealth factor impacts the value of the house positively across the regions. This particular association between wealth and housing value is an important finding of this paper. Although, the data indicate much variability in the home values for different regions, effect is substantially positive even after adjusted for socio-economic factors. However, the extent of the wealth effect is different for different regions. Thus, this study provides evidence for policy makers and regulators to understand some of the underlying forces in the housing market movement and may be valuable for future policy making process.

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