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Crossing the Threshold: Identifying when Economic Forces Affect Property Values Market-wide

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Also Inside:

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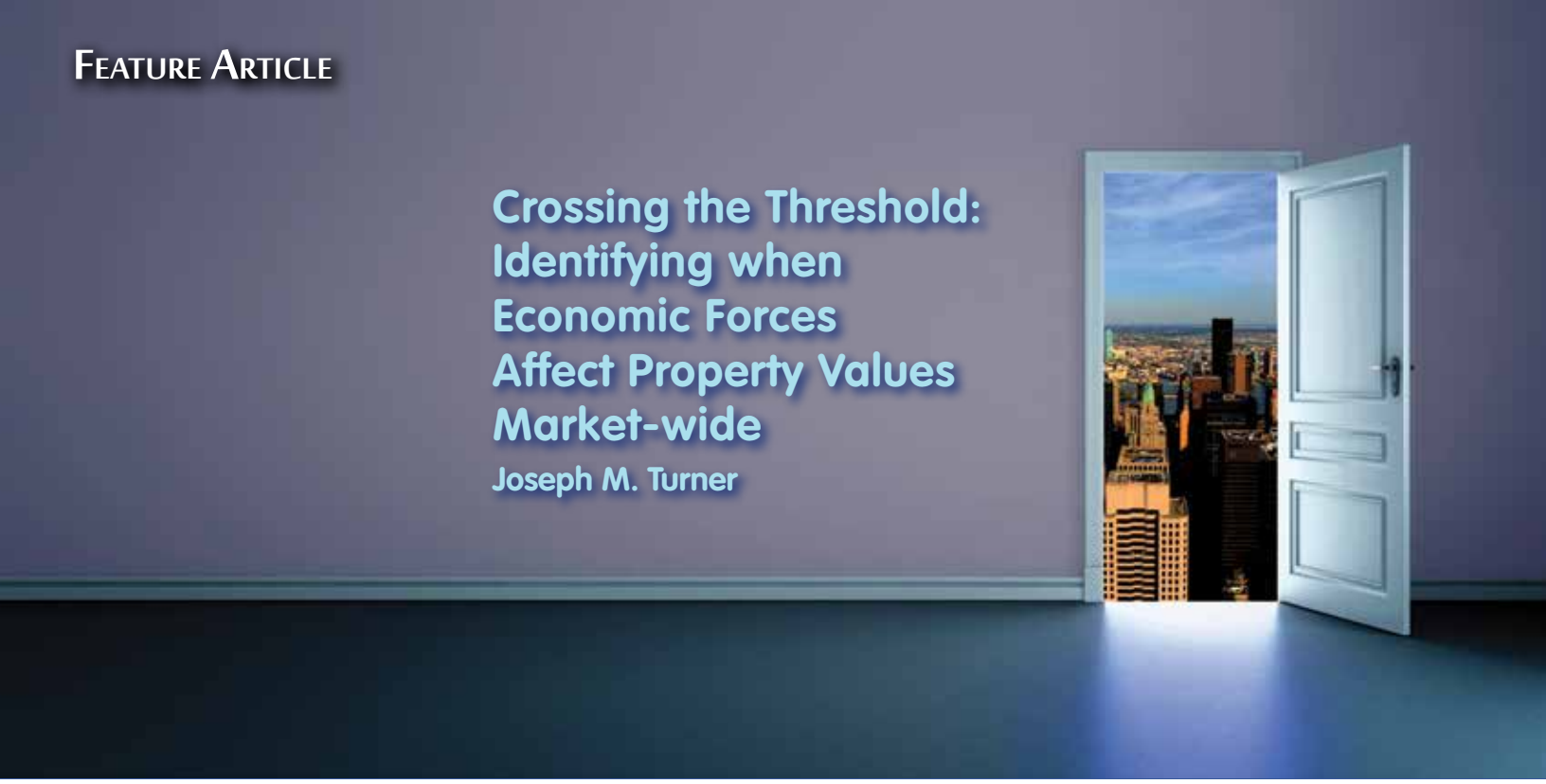


Why is it that sometimes an economic force in a real estate market affects only a few properties and at other times the same force changes overall (average) sale prices across an entire market? What forces motivate individuals who are acting independently in a market to make similar economic decisions? This research study was designed to answer these questions. The study used data embedded in more than 54,000 residential sales that occurred over 35 years (1974–2010) in Saginaw and Bay Counties, Michigan. These data were verified in a comparison with patterns in market participant behavior in data from three U.S. states and in specific relationships in 18 Michigan markets.

The analysis used common marketplace statistics to determine when economic forces begin modifying sale prices across a market. The *how* of market-wide change is uncovered in data from actual events: (1) mortgage interest rates so high they affect housing affordability and (2) excess supply, that is, the saturation of a market with low-priced alternatives (foreclosures). Details sufficient to replicate the work and select multiple regression variables from a large set of market statistics are provided.

Background

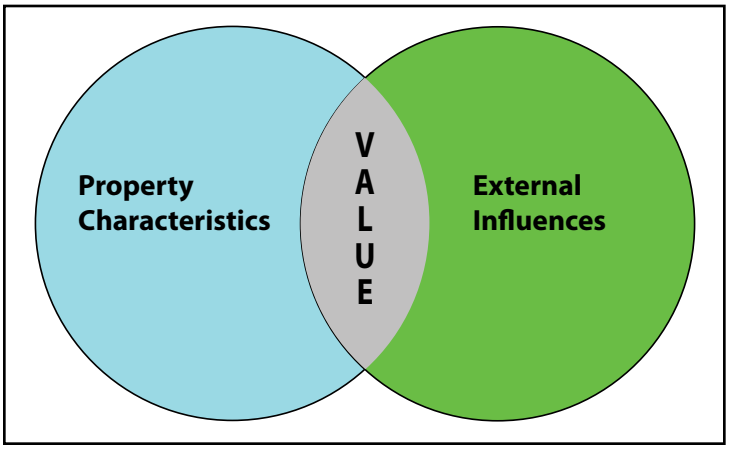
Equilibrium and Disequilibrium

A real estate market at *equilibrium* is a market in which, overall, neither buyers nor sellers are under any unusual stress to buy or sell, there is adequate time to market or search for housing, housing supply and demand are in balance, and an adequate amount of appropriate financing is available to meet market demand. An anomalous market (referred to as *disequilibrium*) is one in which the conditions for equilibrium do not exist because there are forces at work that somehow restrict the ability of a buyer or seller to negotiate terms of a transaction. Other key definitions used in this article are listed at the end of the article (p. 18).

Market Value and Changing Real Estate Values

Land and improvements to it create a portion of a property's market value. Influences from nearby properties, and sometimes other outside influences, affect the value of an individual property. Figure 1 illustrates this: the ultimate value of a property consists of elements of each category of influence. Sometimes an external influence is minor, sometimes major.

Figure 1. Property value is affected by property characteristics and external influences



The concept of external factors affecting the value of a specific property at a distance is not new. Rosewater (1898) cites examples from the construction of public works as early as the 1400s. Owners of property on the Rue de Arcis in France in 1692 and in Great Britain in 1890 were charged a fee on the "distinct basis" of an increase in value when nearby buildings were demolished because they were "obstructive" or to improve dark and narrow streets. An 1807 French law, referring to the geographic spread of property value from public projects, stated that when private property "shall have acquired a marked increase in value, such property may be charged ... according to half the value of the advantages acquired." Similar laws were instituted in Belgium and Germany.

In 1853, following testimony before it, the state legislature approved expenditures to create Central Park in New York City. The general principle was that nearby property values increased as neighborhoods were improved by a public project, and, alternatively, nearby property values diminished when blight existed in the neighborhood. Barlow's work illustrates that New York City's Central Park was an early American example of a recognized geographic distribution of increased property values as a benefit of parkland (Barlow 1972, 20–22). Compton's (2005) compilation of contemporary research and the work of Dickey and Kinnard (1995) demonstrate an abundant knowledge of the proximate impact of external influences.

Similar contemporary research illuminates the principle in other parts of the world. For example, Keskin (2008) identifies externalities that affect property values in Turkey and cites predecessor research in other parts of the world. Changes in property value due to proximity to transportation centers are discussed at length by Yeats (1965) in the journal *Economic Geography*. Chen and Jim (2007) report that in Guangzhou, China, when a market converted from state control to a free market, proximity to parks and views of green space and water had significant values. Chaudhry et al. provide evidence in 2013 that housing prices increased as a result of proximity to natural features such as rivers, lakes, and parks in Chandigarh, India. Smith (2015) writes about the importance of proximity with regard to economic growth and taxation. He cites nineteenth-century economist George Henry's advocacy for taxing the value of locations because prime locations are scarce and scarcity drives up value and puts a "brake on growth." The work of DeChant (2011) documents research into the proximate effect of train stations on nearby property values.

The courts recognize myriad influences on value from external sources. Examples are views of nearby lakes or forests or negative impacts from sources of dangerous pollution. Commonly, public improvements such as a street or water line are recognized as contributors to value.

The courts recognize a myriad of influences on value from external sources. Examples are views of nearby lakes or forests or negative impacts from sources of dangerous pollution. Commonly, public improvements such as a street or water line are recognized as contributors to value. The U.S. Supreme Court cites a plethora of judicial rulings from around the country in its 1893 decision in *Illinois Central Railroad Co. v. City of Decatur*. The *Illinois Central* case contains a mandate for the demonstrable spread of increased market value from an external source affecting properties lying within a specific geographic area, if a special assessment tax is to be valid. The U.S. Supreme Court discusses at length the potential for a public work (a park) to increase the market value of nearby properties in *United States v. Miller et al.* (1943).

The effect of these external influences can be proximate or market-wide. Under some conditions, the *externality* influences value within a limited, nearby geographic area. The limited area may correspond to a neighborhood. Research has demonstrated that vacant and abandoned properties in loan foreclosure may have this localized effect. Foreclosures often reduce property values only within a limited geographic area (Frame 2010; Hartley 2010), usually less than 600 feet.

At other times, something happens and the negative impact of multiple foreclosures becomes an economic influence on price extending to all classes of affected properties within a given market. In fact, the geographic distribution of a market-wide effect may extend to more than one market. For example, a nuclear disaster or factory closing, or closings, may dramatically diminish demand for properties within a region. On the other hand, a scenic view of mountains may affect property values in several markets.

Thus, an external influence on real estate can come from some factor within a neighborhood or outside a neighborhood. In their paper on changes in value due to proximity to high-voltage power lines, Dickey and Kinnard (1995) describe three potential effects of an externality: diminished property value, increased market time, and fewer property sales. All three effects were examined for this study.

Affordability

Economic forces that generate market-wide effects include housing supply, a shortage or abundance of potential buyers, and market forces categorized

as indicators of *affordability* (e.g., average wages, hours worked, and the cost of mortgage money). When the cost of buying a home rises in one type of financing, buyers and sellers migrate to alternative methods that are more affordable. Lifflander describes the impact of money and monetary trends on the value of real estate:

> *[M]ost people buy real estate based on the payment amount, not the total cost, and as rates increase, fewer buyers will be able to buy at each price level, resulting in further declines in values. … Supply and demand used to be the main economic factor influencing real estate values, but now international and national monetary policies are playing a major role and should be considered in any projection for real estate valuations. (Lifflander 2011)*

Figure 2 illustrates interest rates in the Saginaw County, Michigan, market. By law, land contracts were capped at 11 percent and commercial lenders could charge up to 25 percent for mortgages. As conventional mortgage rates rose above the 11 percent rate cap, there was less demand for them. Eventually the use of conventional loans plummeted. Figure 3 shows the transition of dominant financing from conventional loans to seller financing.

A common practice was for the seller to offer to finance the purchase via a land contract with a down payment that often mirrored conventional loans of 5 or 10 percent and an amortization schedule for the principal balance at 11 percent interest for a 25-year period. It was agreed that a *balloon* payment would be due in five years. The seller bore a risk for five years anticipating that the buyer would refinance. The buyer anticipated growth in property values and a drop in interest rates. In Saginaw County, the land contract became the dominant type of real estate financing as conventional lending rates surpassed approximately 13.5–14 percent. Similarly, threshold points beyond which the infrequently used land contract began to gain dominance were found in other Michigan markets and in North Dakota and South Dakota.

To compete, commercial lenders began creating new methods of financing (renegotiable rate, adjustable rate, and wrap-around mortgages) as compensation for the huge monthly payments required as interest rates rose. Reworking existing loans and introducing new versions that made lower monthly payments possible became known as *creative financing*. That financing strategy

Figure 2. Mortgage rates in Saginaw County, Michigan

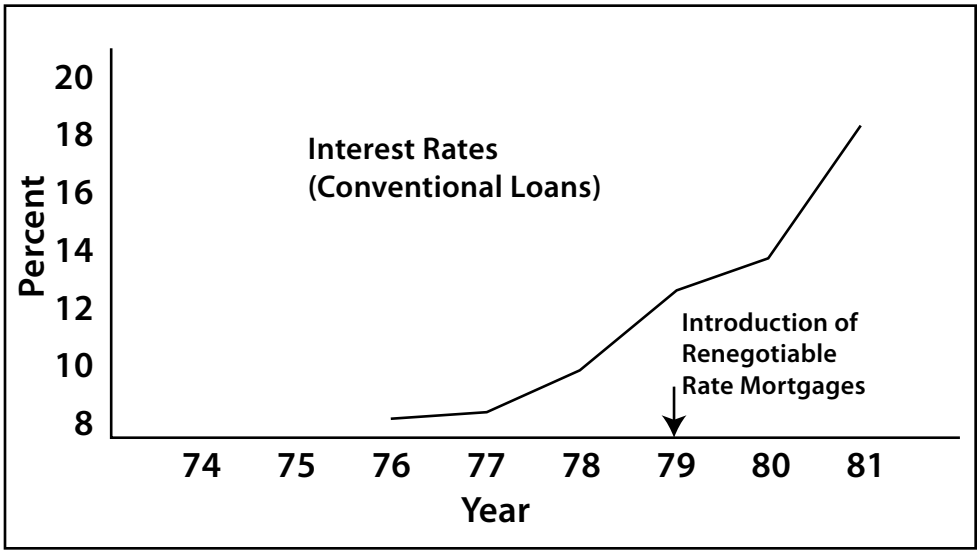
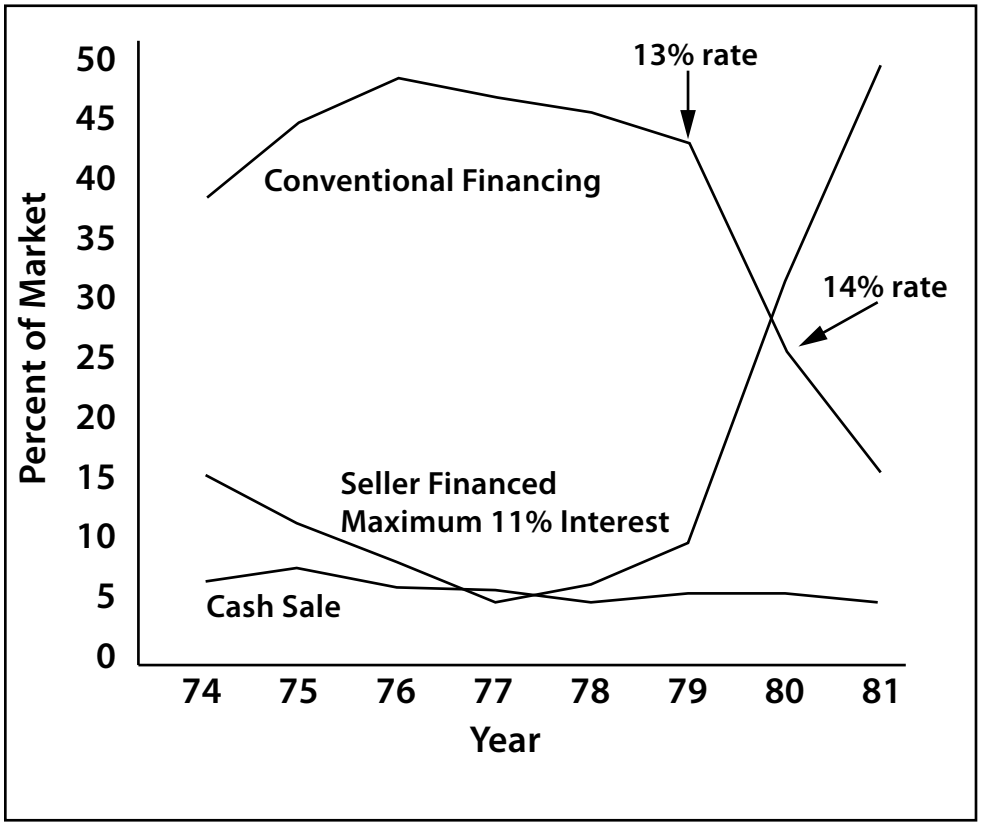


Figure 3. Use of financing in Saginaw County, Michigan



led to disputes as to what exactly was a fair market price when alternative financing methods became the norm. Among the court decisions that discuss and acknowledge this form of economic impact is *County of Washtenaw v State Tax Commission* (1985), which requires taxing officials to consider the impact of creative financing with regard to market value.

Supply and Demand

In some instances, market participants abandon options involving financing and make cash purchases. The obvious example is the preference of purchasing with cash following the relatively quick infusion of low-price properties across the United States in 2007.

In other instances, certain submarkets are not attractive to most buyers active in the overall market. This could be a submarket known for high crime rates or blight. Where crime and blight are excessive, there are relatively few buyers compared to the number of properties available for sale. Among those who will buy, however, there may be discernible differences in the motivations of buyers interested in living in the home and those interested in acquiring inexpensive properties to rent.

The participation rate of commercial lenders and real estate brokers in high-crime or blighted neighborhoods, as demonstrated by publicly recorded sales of property, is usually lower than that in more robust areas. Sales in these two types of neighborhoods often consist of transactions facilitated by the property owner and/or the dissemination of the sale information by family and friends rather than the professional sale agent. Sometimes such transactions are labeled as FBO (for sale by owner). FBO transactions occur in every market, but they are prominent in blighted and high-crime areas.

Potential buyers willing to acquire properties in areas commonly known to have high crime levels and/or blight have different motivations than buyers and sellers in areas perceived to be safe and well maintained. Tolerance for unsafe conditions is one of them. A few potential buyers are willing to ignore what are safety issues to others.

I have worked in such neighborhoods for 40 years and interviewed many market participants. Invariably, they buy in high-crime areas because other family members live there or there is a special opportunity that overcomes such fears. In the United States, *regentrification* is a term used to describe the transition of a neighborhood from being negatively viewed to being perceived as affluent. The desire to acquire older properties with historic significance is one motivation for regentrification.

Potential buyers willing to acquire properties in areas commonly known to have high crime levels and/or blight have different motivations than buyers and sellers in areas perceived to be safe and well maintained.

Sometimes a buyer's economic condition is such that low housing prices are the only option. Individuals cite low housing prices as a price opportunity enhanced by nearby family. They realize the benefit of much lower annual property taxes and, if financing is involved, very modest payments.

Another example is that of a highly paid automotive industry employee, a single woman who chose to live in a high-crime area with blight even though her income placed her in the upper-middle-class economic bracket. She dressed well, drove a new car, and at the time of the interview was buying new furniture for her entire house. She revealed she bought new furniture every year. Her motivation: the house was small and therefore easy to refurnish, she had extra money because of her job, the cost of a home was far less than the price of her car, and she felt very comfortable in making an annual purchase of that nature.

Unexpected attitudes of those choosing to live in blighted and crime-ridden neighborhoods can be found in a 1993 study by Delta College (Hill and Scanlon 1993). Retained to examine issues in a neighborhood with a poverty rate above 60 percent, an unemployment rate of more than 40 percent, and the highest crime rate in a city that would become known for the highest murder rate of a small city in the United States, the study authors were struck by the attitudes of residents. The report states,

> *If neighborhood residents had become depressed in the face of the large problems facing them, it might be understandable. But they remain remarkably optimistic and positive.* (Hill and Scanlon 1993, 18)

The numbers may be small compared to all market participants, but submarkets do have individuals willing to buy where most won't. Often motivated by love or money, they buy where housing supply exceeds demand and transactions are financed nonconventionally.

When the potential buyer is a landlord looking to acquire a single-family rental in a high-crime or blighted neighborhood, the principal motivation is cash flow. This statement is derived from sworn testimony by investors who make such purchases and then petition a local property tax board of review for a reduction in tax burden.

At the Saginaw, Michigan, Board of Review, petitioners are placed under oath and examined about the nature of the purchase of the property whose value they are appealing. What was the motivation for the purchase? What economic conditions or rules of thumb did they use

to determine whether a purchase should be made? The public record of testimony over a number of years shows that investors in the Saginaw County market often act on the premise that a property should be purchased if the money they invest is recoverable from the anticipated rent within one to three years. An example is a home renting for $450 to $600 per month with utilities paid by the renter that could be acquired for between $7,500 and $15,000 in cash. The cash price would include the cost of improving the house enough to be able to qualify for a rental license. Some investors and sellers engage in land contract financing. However, most of these transactions are cash at the time of closing; very few involve any commercial lender financing.

The U.S. housing collapse of 2006–2009 flooded local markets with inexpensive properties relative to previous transaction prices. To better understand the impact of foreclosures, consider the two components mentioned earlier: (1) a nearby or proximate effect that exists when there are few foreclosures relative to the number of competing properties offered for sale, and (2) a market-wide effect that exists when the abundance of foreclosed properties means there is a large number of low-priced alternatives relative to the number of properties being marketed.

The proximate effect of vacant, foreclosed properties is related to overall neighborhood characteristics, and it is limited in extent geographically. In a study of 1.8 million housing transactions between 1987 and 2008 in the state of Massachusetts, Campbell et al. (2009) found the average price discount due to foreclosures was about 28 percent. They compare that average to 5–7 percent for estate sales (following a death) and 3 percent for bankruptcies. They found foreclosures caused reductions of nearby property values up to about one-half mile. They also found the "discount is larger and more persistent when the share of forced sales is higher." Localized effects are smaller and geographically limited ... until some tipping point or threshold is reached.

Supply and demand are key to both proximate and market-wide effects. If there are few foreclosures relative to the total number of homes for sale in a market at equilibrium, the foreclosed property may be viewed as a *buy*—an opportunity to acquire a home at a price that is a bargain. Conversely, when there is an abundance of foreclosed properties (or tax reverted or any other abundant, cheap housing), the sheer number of alternatives creates competition that results in a reduction of prices across the entire market for affected properties.

Tabular data from 18 Michigan markets demonstrate (with limited exceptions) that prices drop market-wide when there is a ratio of about one foreclosed property introduced to the market for every three sales reported annually by the local multiple listing service (MLS).

When do foreclosed properties change from affecting only nearby properties to affecting all properties within the market? In markets in which the influx of properties is large and they are priced significantly lower than the average for the existing stock, there is a market-wide reduction in property values. Tabular data from 18 Michigan markets demonstrate (with limited exceptions) that prices drop market-wide when there is a ratio of about one foreclosed property introduced to the market for every three sales reported annually by the local multiple listing service (MLS). The large influx of inexpensive properties becomes a housing supply issue affecting competition. So many houses are available at prices below existing market level that sellers have to adjust their pricing to compete. Similar impacts result from an abundance of properties reverted for unpaid taxes.

Applying Information

Having established a long and geographically disperse history of the recognition of value influences arising from a real estate property itself and from outside sources, and having observed similar participant behavior in geographically dispersed U.S. markets, I decided to search for statistically valid correlations.

First, of the many potential variables that can affect property values, some were selected for inclusion as independent variables to correlate with sale price. From those initially selected, the most appropriate variables were assigned to one of four broad categories used to illustrate indicators of market-wide price changes in each of three time periods.

Those selected as one of four categorical variables used in each time frame had to meet standards establishing them as the best indicators in that period. For a result to be deemed valid, the probability that the outcome could have been *chance* had to be 5 percent or less ($p \leq 0.05$). The confidence interval had to lie within two standard deviations of the mean ($t \geq 2.0$). Finally, the most conservative measure of correlation, the adjusted R^2 score, had to exceed 50 percent (0.50).

Understanding Local Market Patterns in Sale Data

In searching for markers of change, the first challenge is to isolate behavior in a specific market under varying economic conditions. Data from some markets were available for the years 1974 through 2010, and, in other markets, for a shorter time period. There are

four categories of financing generally available in any U.S. market:

1. Cash sale (buyer-financed, no commercial loans required)
2. Conventional loan (private commercial lenders including credit unions)
3. Federal government-incentivized loans (Federal Housing Administration [FHA], U.S. Department of Veterans Affairs [VA], and Farmers Home Administration [FmHA])
4. Seller-financed loans (land contracts, no commercial loans required).

All sale prices are expressed in current U.S. dollars.

Figure 4 illustrates the utilization of these types of financing for residential real estate transactions in the Saginaw County, Michigan, market between 1974 and 2009. The market is about 100 miles north of Detroit along the Interstate 75 industrial corridor. Its northern neighbor, Bay County, is the demarcation point between the industrialized southern counties and the recreation areas of central and northern Michigan. Because of the relatively high wage scales (compared to national averages) of its working class population (and for other reasons), the county has scored well on measures of housing affordability. According to Michigan Economic Development Corporation postings, about 87 percent of the county's workers are employed by private firms; 11.5 percent are government employees; and 1.5 percent are employed in farming.

During the study period, Saginaw County became more urbanized. Consequently, the number of residential parcels grew from about 66,600 in 1980 to 78,600 in 2010 (see table 1). The median number of residential properties sold each year was about 2.6 percent of the total number of existing residential properties. During this time period the total value of the property on the county equalization report grew from about $1.9 billion to about $8.8 billion (unadjusted for inflation). The median value of the residential property tax base sold during the time period was about 3.3 percent of the total of all residential property on the tax rolls. The vast majority of residential properties sold annually were detached single-family structures situated on 0.2 to 0.3 acre (0.08 to 0.135 hectare) in traditional subdivisions and plots of 10 acres (4.05 hectares) or less in a rural setting.

Over the four decades of data examined, three financing patterns emerged. Most of the time, the conventional loan dominated as the market's most used financing method. Cash sales and owner-financed transactions (land contracts) were among the least utilized financing methods in most years. However, in the 1980s and the late 2000s, patterns were different. The land contract dominated when interest rates rose. Cash sales dominated when many inexpensive houses flooded the market.

Verify Pattern Similarity across Markets

Figure 5 shows the same data for Bay County, Michigan. Data were not available for the entire four decades

Figure 4. Type of financing as percent of market in Saginaw County, Michigan, 1974–2009

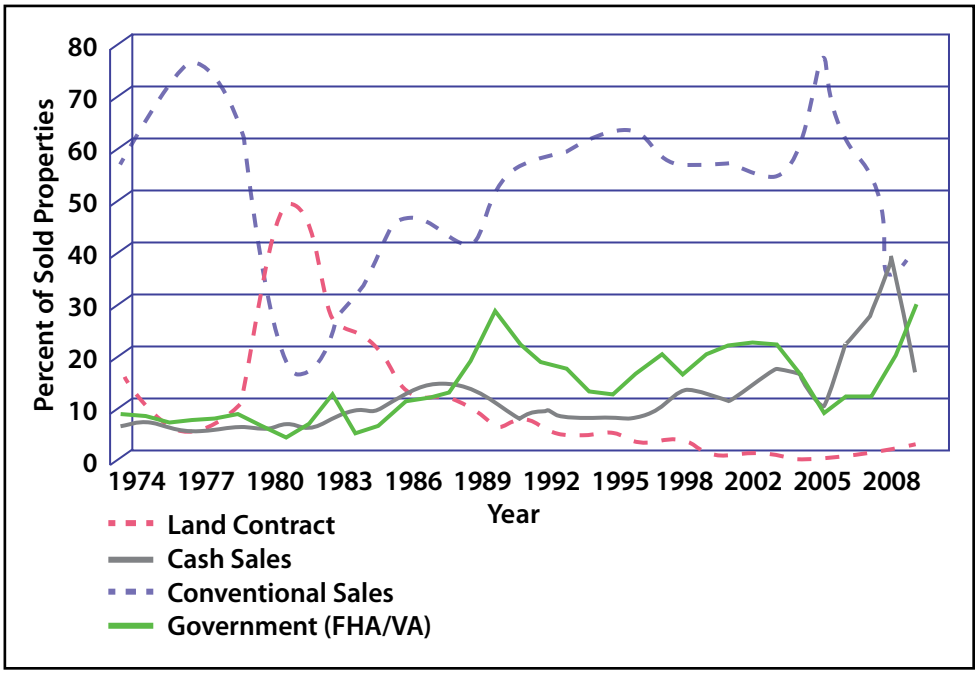


Table 1. Market parameters in Saginaw County, 1980–2010

Year	County Residential Parcel Count	Parcels Sold by MLS Participants	Sold Properties as a Percentage of All Properties	County Market SEV* × 2	Sold Properties Transaction	Sold Properties as a Percentage of Total SEV* Market
1975						
1980	66,644	1,594	0.024%	$1,944,637,386	$30,699,467	1.579%
1985	67,892	1,665	0.025%	$2,329,428,850	$77,747,428	3.338%
1990	69,071	1,520	0.022%	$2,739,215,556	$88,748,547	3.240%
1995	71,306	1,878	0.026%	$3,731,068,098	$140,265,234	3.759%
2000	74,155	2,458	0.033%	$4,687,121,604	$221,455,968	4.725%
2005	77,973	2,113	0.027%	$7,367,679,882	$238,587,282	3.238%
2010	78,646	3,083	0.039%	$8,773,768,334	$246,625,585	3.641%

**SEV = one-half of fair market value.*

encompassed by the Saginaw County data, but the data collected show the choice of financing utilized by buyers and sellers in the Bay County market is indeed similar to that in the Saginaw County market.

Because the patterns observed in these two markets were similar, a cross-market check was made to determine whether other parts of the United States exhibited similar buyer/seller choices. Figures 6 and 7 illustrate the patterns of transaction financing for the years 1979 and 1980, respectively, among real estate markets in Saginaw County, Michigan; Bay County, Michigan; Fargo, North Dakota; Genesee County, Michigan; and Sioux Falls, South Dakota.

In 1979 (figure 6), conventional financing reigned as the dominant choice of transaction financing in all markets. The cash sale uniformly was the least used financing in each market. Seller financing was more heavily used than cash sales and had a relatively similar use profile in each market. There was a wider variation in the use of U.S. government loans among the five markets. Interestingly, if conventional loans and government-backed loans are combined, the pattern among the markets is remarkably similar. Conventional financing and commercial lender loans enhanced by government incentives clearly dominated, with cash sales being a minor portion of the sales and the more abundant seller-financed sales having similar use patterns across the markets.

The picture changed in 1980 (figure 7). When commercial lending rates increased dramatically, there was tremendous growth in the use of seller (land contract) financing and greatly diminished use of conventional financing. Cash sales during this time period remained the least used financing method in all markets.

These snapshots of the use of residential financing support the contention that conventional financing is the

Figure 5. Type of financing as a percentage of market in Bay County, Michigan, 1985–2008

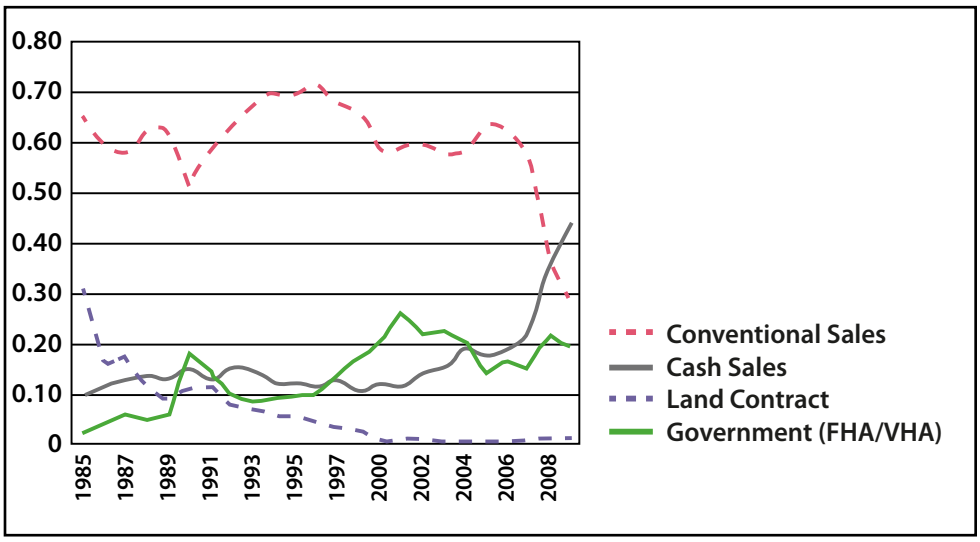


Figure 6. Comparison of type of financing in 1979

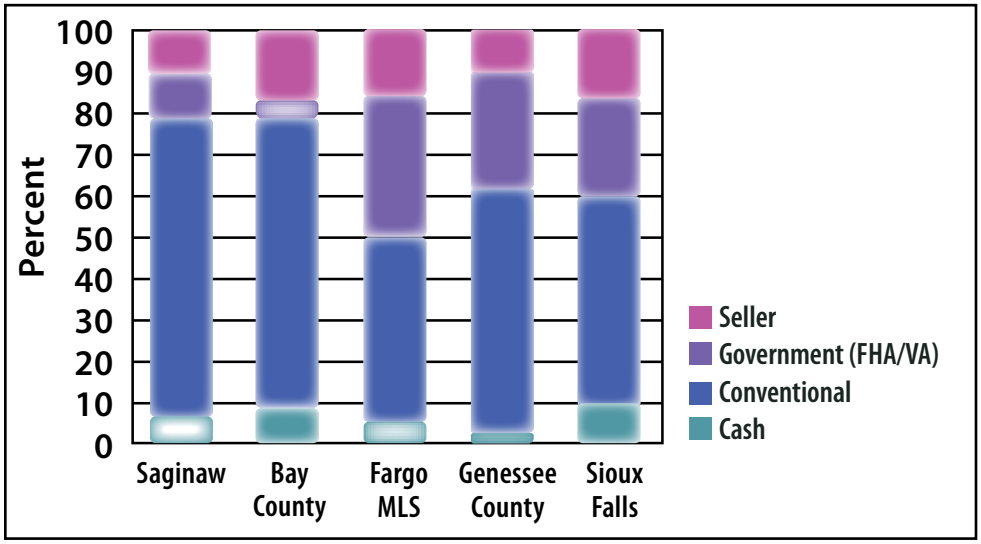
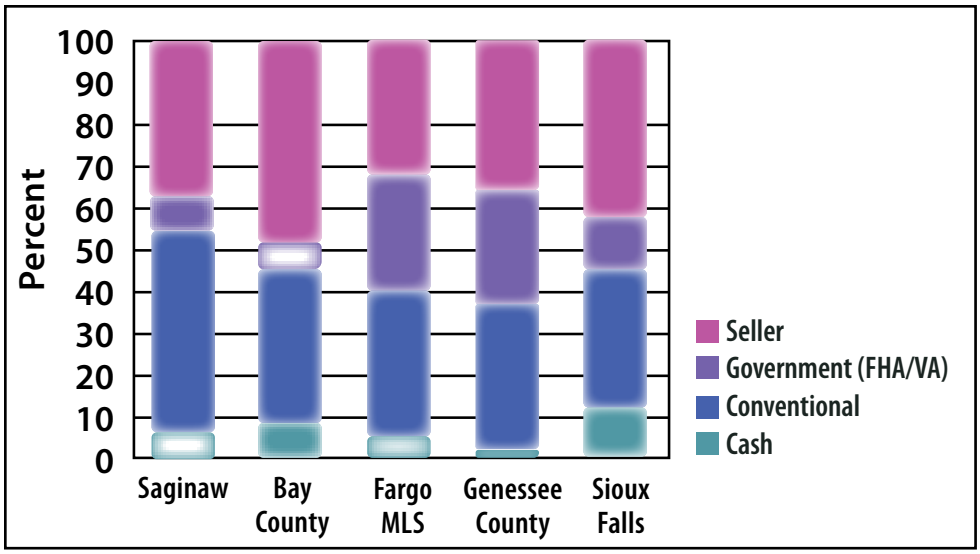


Figure 7. Comparison of type of financing in 1980



dominant type of financing across the United States. As expected, although dominant use patterns are similar, there is some variation between local markets in the choice of minority financing methods. For example, the use of government-sponsored loans, such as FHA, VA, and FmHA, varies from market to market. While this theory was not pursued, it is believed that in rural areas FmHA loans represent a larger percentage of sales and in low-income urban areas the use of VA and FHA loans is higher.

An obvious pattern across these markets is that regulated lending institution financing (conventional loans) is almost always the dominant choice of financing. Another obvious feature is that cash, land contracts, and government loans usually represent less than 15 percent of a market.

Consistent with Liffander's (2011) statement, the cross-market similarities shown in figures 6 and 7 suggest lending rates reflected in national data are a principal driving force in local markets across the United States. The pattern variation that does exist leads to speculation that the decisions of market participants to use minor forms of transaction financing more or less frequently depend in part on local market dynamics; for example, urban areas may experience more FHA financing.

Statistical Test Scoring and Individual Market Metrics

The analysis of Saginaw County data explored possible correlation between local choice of financing and the national average rate published by Freddie Mac. Table 2 illustrates the results. There is an extremely high correlation between the national average 30-year mortgage rate published by Freddie Mac and the use of financing in this market. The *p*, adjusted R^2, and *t* statistics all support the correlation.

The use of these statistics answers two fundamental questions: Does a correlation exist between the independent variables and the dependent variable (average national rate)? and How valid is the estimate?

Figure 8 is an example of correlation. First, both sets of data (red and black) are positively correlated with the dependent variable (line). Second, the black data have less deviation or spread. The idea of correlation is that the less deviation in the regression line, the higher the level of correlation. Each of the *R* scores represents how well the data follow the regression line. Red scores are scattered and, had they been calculated, would have a lower *R* score than the less scattered black data. An *R* score of zero indicates no correlation, and an *R* score of 1.0 indicates 100 percent correlation. A positive number means a positive correlation; a negative number, an inverse correlation.

In multiple regression analysis, the *R* score is used to express how much of the predicted data can be explained by the variables. In this regression, less than 5 percent of the predicted data is noise or error. About 95 percent of fluctuations can be explained by the local choice of transaction financing. The *R* scores are high. Because local mortgage rates are derived from national money policies, this is expected.

The *p* and *t* scores determine the reliability of a correlation. Figure 9 illustrates a normal statistical distribution (blue line) and that of a sample population (red line). At least 95 percent of the sample curve area should be included. The *t* score provides a mechanism by which the area of a curve from a sample can be compared to a normal curve.

Table 2. Correlation of financing choice with mortgage interest rates in Saginaw County, Michigan, 1974–2009

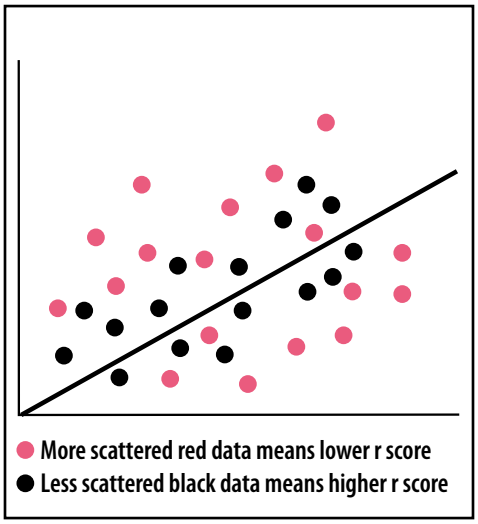
Regression Statistics	
Multiple R	0.993013424
R^2	0.986075659
Adjusted R^2	0.952470078
Standard Error	1.201263045
Observations	35

ANOVA

	df	SS	MS	F	Significance F
Regression	4	3167.91508	791.97877	548.829322	1.39488E-27
Residual	31	44.73402001	1.443032903		
Total	35	3212.6491			

	Coefficients	Standard Error	*t* Stat	*p* value	Lower 95%	Upper 95%
Intercept	0	#N/A	#N/A	#N/A	#N/A	#N/A
Cash	0.031780503	0.030340399	1.047464889	0.302983796	–0.030099149	0.093660154
Conventional	0.080514223	0.008372919	9.616027882	8.09543E-11	0.063437542	0.097590904
Government	0.06931298	0.032087065	2.160153337	0.038607796	0.00387098	0.134754979
Seller	0.327457565	0.01448281	22.61008523	7.96494E-21	0.29791968	0.35699545

Figure 8. Example of a correlation



In the case of a normal curve, the 95 percent area lies at a z score of 1.96. As sample size increases, the curve of the sample size becomes very similar to the normal curve. In the sample in figure 9, the curve (red) is flatter and the ends of the curve lie above the normal curve. Because of shaping, the comparable t score for a z score of 1.96 is 2.04. To ensure validity, the confidence interval should be two standard deviations or more. In table 2, variables with a t score equal to or greater than 2.04 are conventional loans, land contracts, and government-backed loans.

The assurance of reliability comes when a companion to the t statistic, the p score, is used. The target is a probability that these results happened by chance at 5 percent or less. A p score of 0.05 or less was obtained for the conventional loan, the land contract, and the government-backed loan. Seller financing and conventional mortgages scored lower than 0.00001 percent in the analysis. There is less than a 4 percent chance scores of government-backed loans occurred by chance.

However, cash sales displayed a p value of 0.30 (30 percent) and a t score of 1.047 (little more than 68 percent of curve area). Therefore, participants choosing cash to make a purchase were not acting in synchrony with the federally reported average interest rates. They were motivated by something else. Clearly, with the exception of a cash sale, a participant's choice of transaction financing in a local market is driven by the cost of mortgage money as reflected in the average annual national mortgage rate (published Freddie Mac rate).

Market Time and Sale Volume

Dickey and Kinnard (1995) state that both increased market time and fewer sales result from an externality that reduces market value. The market time for residential properties was available for this study. Selling time is referred to as *days on the market* (DOM). The number of listings that sell and the DOM are sometimes inversely related. In both the period of high interest rates and the period of high foreclosures, it took longer to sell property and fewer properties sold. That relationship must be affected by multiple factors, because when DOM and units sold are statistically tested, the adjusted R^2 value is lower than in most cases (0.575243437).

In regression tests for the study period, DOM (p = 0.0118788) and units sold (p = 3.17666E-07) do solidly correlate with price. During the first and last periods of the study, DOM and units sold are clearly inversely related. When market time (DOM) goes up, units sold goes down (Figure 10). During the middle period (1986–2005), that behavior is observable but not nearly as pronounced.

Figure 11 illustrates correspondence between property foreclosure data,

Figure 9. Normal statistical distribution and a sample population

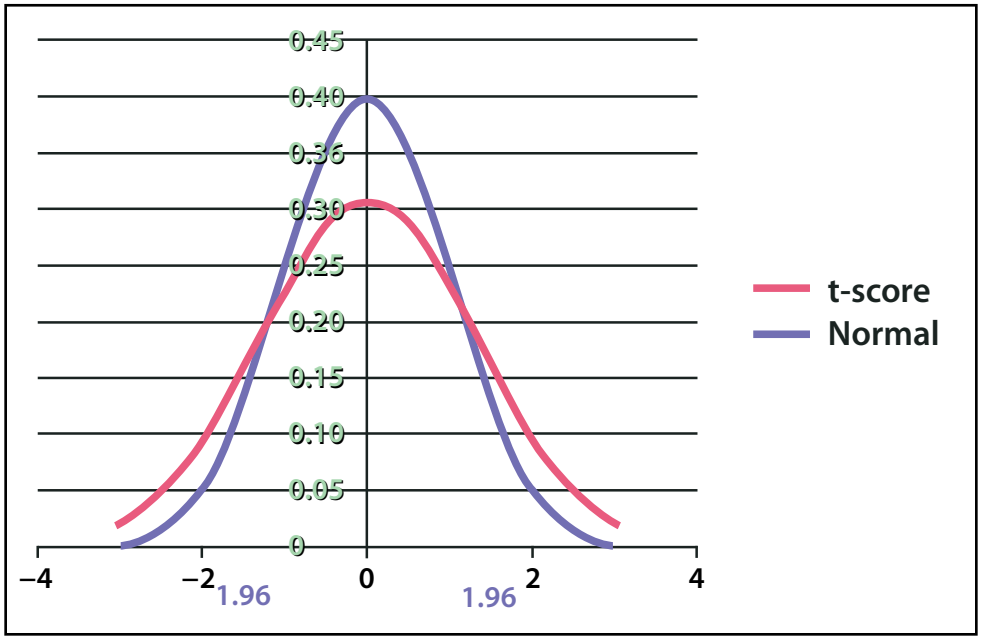


Figure 10. Market time and units sold

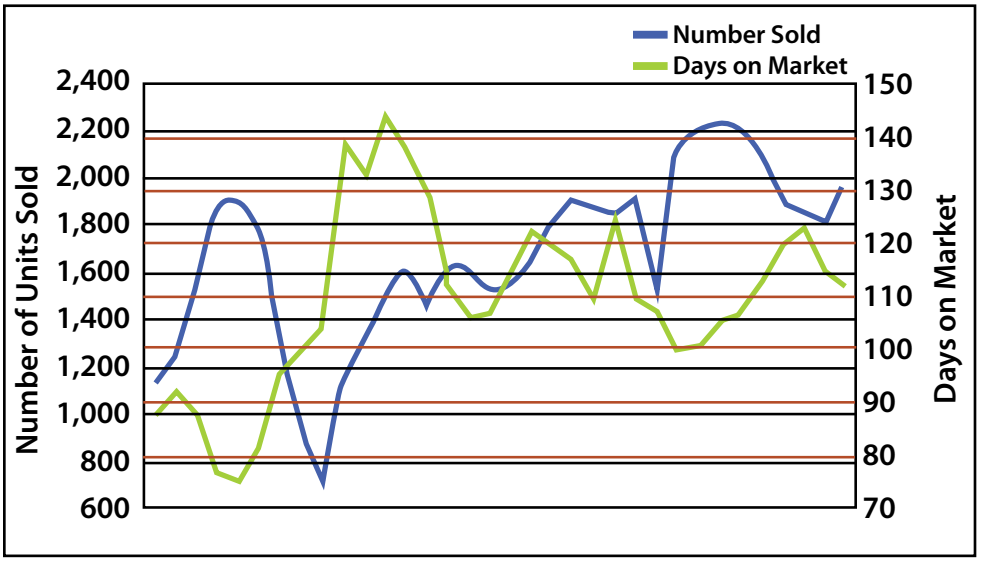
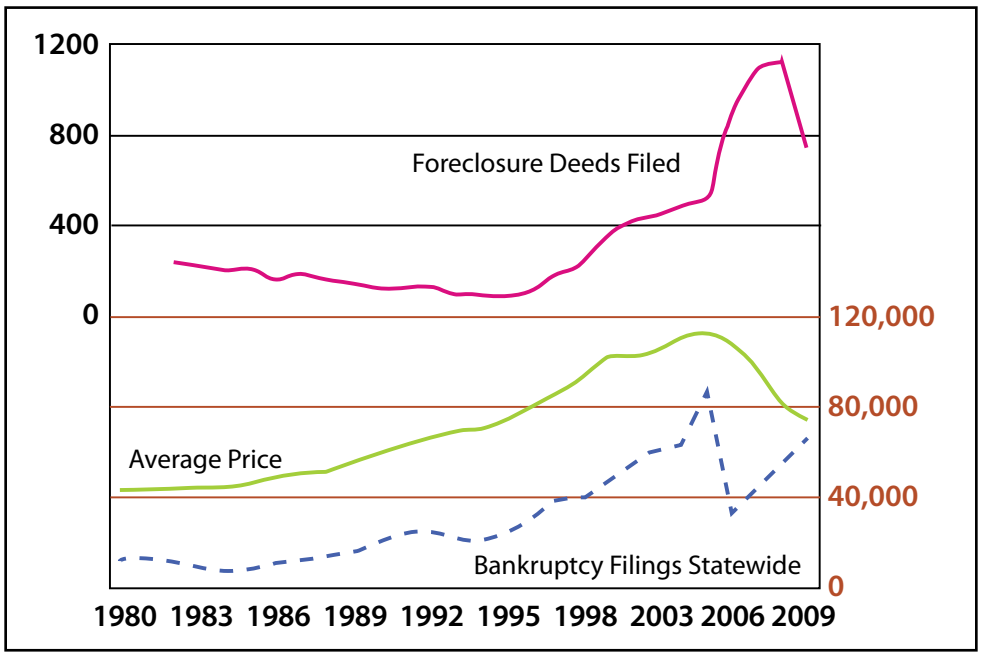


Figure 11. Foreclosures, residential sale price, and bankruptcy rate



personal bankruptcy data and average sale price for Saginaw County. The filing of personal bankruptcies and mortgage foreclosures follow each other, and as they peaked, property values plummeted.

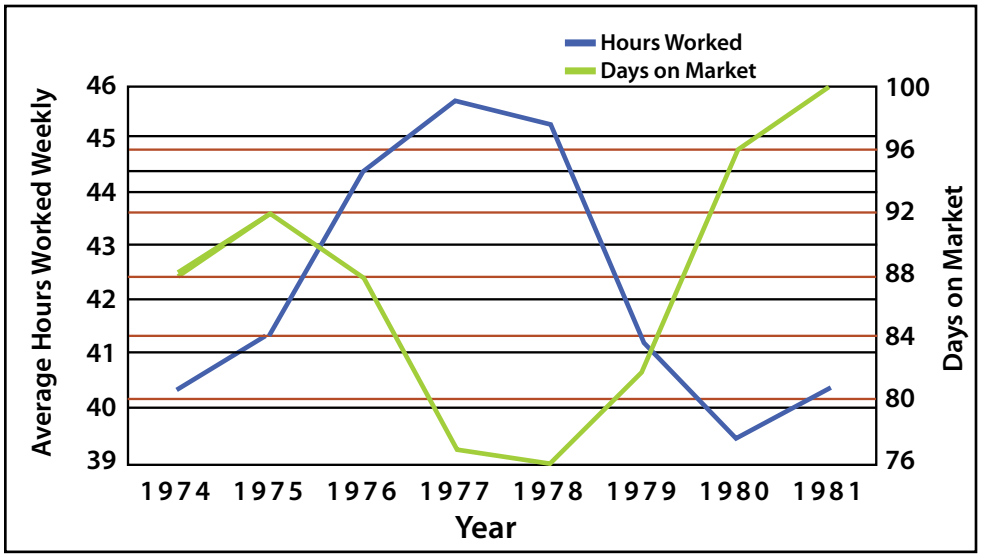
Table 3 lists the ratio of foreclosure deeds (sheriff's deeds) to listings sold by year and average sale price in Saginaw County. In this market, when that ratio dropped below 3:1, prices fell; that is, when there was one foreclosure for every three listings sold by the MLS, a market-wide change occurred. In contrast, the data in table 2 suggest inflationary forces are the principal price driver at market equilibrium. Similar patterns were found in all 18 Michigan markets examined.

Another metric examined was a measure of affordability for residential properties, specifically, the number of hours worked by employees in a market. When pay rates are based upon an hourly rate, the metric is an indicator of household cash flow. In this market, at its peak, automotive plants directly employed approximately 26,000 individuals. The total work force consisted of 100,000 individuals, many of whom worked for small tool-and-die firms or other automotive suppliers. The bottom line is that much of the local work force made a living based upon an hourly rate of pay. Figure 12 illustrates a relationship between the DOM and the average number of hours worked by employees in Saginaw County as reported to the Michigan Department of Labor. The expected inverse relationship is shown: as hours worked grows, market time decreases; as hours worked decreases, market time increases.

Table 3. Ratio of foreclosure deeds to avarage sale price in Saginaw County, Michigan, 1981–2009

Year	Ratio Sold/ Foreclosed	Average Sold Price ($)
1981		44,489
1982	2.94	43,378
1983	4.84	46,150
1984	6.32	45,995
1985	7.13	47,353
1986	9.60	49,680
1987	7.75	50,652
1988	9.58	51,871
1989	11.27	56,043
1090	12.06	58,387
1991	11.91	62,627
1992	11.85	66,993
1993	17.16	69,632
1994	19.94	69,538
1995	20.19	74,689
1996	16.19	80,823
1997	10.79	84,341
1998	6.73	91,283
2001	6.24	102,799
2002	5.18	102,065
2003	5.04	105,082
2004	4.41	110,073
2005	4.01	113,295
2006	2.15	109,593
2007	1.69	97,115
2008	1.62	81,458
2009	2.69	75,973

Figure 12. Weekly hours worked and market time



Average Annual Price

Table 4 consolidates earlier discussions, showing selected market data for Saginaw County for the time period 1974 –2009. No adjustments were made for inflation. Data on 30-year mortgage rates (average annual), average annual sale price in this market, number of units sold, and average annual market time are presented.

Comparison of table 4 with figure 2, and other data presented here, shows that the average annual transaction price rose consistently over the four decades, except when the conventional loan was replaced by what had been a typically minor type of financing. Following the interest rate spikes in 1981 and 1984, prices dropped. Following the DOM spike in 2006 and subsequent years, prices dropped. However, unlike the period of high interest rates and land contracts when prices were modestly depressed, prices plummeted when cash became king. Although these data represent two markets in the state of Michigan, similar price collapses were reported across the United States in this time frame (Cox 2011).

Foreclosures across Markets

Once the statistical relationship between market equilibrium, dominant choice of financing, and average annual sale price was established, an intensive examination of sale prices and the rapid introduction of low-priced properties (foreclosures) was undertaken. Data from 18 Michigan MLSs with appropriate property foreclosure data available were studied. Average annual transaction price for the entire market differentiates the impact of flooding a market with foreclosures from the effects on nearby properties documented in other research.

Table 5 shows that in each of the markets examined, a *threshold point* was found at which average annual transaction prices declined and the cash sale became the dominant choice of financing. The threshold point is that point in the ratio of new foreclosures to the number of listings sold through the local MLS at which the average annual market price drops. It occurs when the number of foreclosures introduced into a local market in one year is so great that competition from them lowers listing prices market wide. Without exception, when the number of foreclosed properties available for sale in the markets studied became great enough, a threshold effect occurred.(The point at which prices dropped below the preceding high price in each market is shaded lavender. The lowest ratio below the threshold point is shaded light blue. They are clustered near the year 2006.) Note the varying ratios. Markets with high average annual sale prices experienced a drop in prices at higher threshold points than markets with low annual averages. For example, markets with consistently high transaction prices have much different threshold points than markets with the lowest transaction prices (e.g., Allegan and St. Joseph). Each market has its own dynamics.

Importantly, the proximate effect can be tied to the ratio of the number of new foreclosures to the number of properties sold by the dominant MLS. If the ratio of new foreclosures to sales within these markets is greater than the threshold point, the effect of foreclosures remains within a limited geographic area. However, if the abundance of foreclosed properties causes the ratio to fall below the threshold point, the average sale price for all properties declines. Competition resulting from the imbalance of housing supply and demand drives the market out of equilibrium and results in lower transaction prices.

Proximate influences from nearby properties can be distinguished from economic factors that exhibit a market-wide influence on value. This of course is critical to any analysis in which a decision has to be made as to whether an influence is limited geographically or affects all properties within the market.

Table 4. Selected market data for Saginaw County, Michigan, 1974–2009

Year	National Rate 30-Year Mortgage	Average Price of All Sold ($)	Number Sold	Market Time (DOM)
1974	9.19	26,953	1,139	88
1975	9.05	28,332	1,245	92
1976	8.87	29,821	1,524	88
1977	8.85	32,369	1,892	77
1978	9.64	35,851	1,906	76
1979	11.20	40,331	1,798	82
1980	13.74	43,038	1,309	96
1981	16.63	44,489	978	65
1982	16.04	48,378	715	104
1983	13.24	46,150	1,152	123
1984	13.88	45,995	1,315	125
1985	12.43	47,353	1,476	133
1986	10.19	49,680	1,623	130
1987	10.21	50,652	1,464	125
1988	10.34	51,871	1,610	112
1989	10.32	56,043	1,623	106
1990	10.13	58387	1,520	107
1991	9.25	62,627	1,536	115
1992	8.39	66,993	1,623	122
1993	7.31	69,632	1,802	120
1994	8.38	69,538	1,914	116
1995	7.93	74,689	1,878	109
1996	7.81	80,823	1,846	109
1997	7.60	84,341	1,920	110
1998	6.94	91,283	1,527	107
2001	6.97	102,799	2,154	99
2002	6.64	102,065	2,205	101
2003	5.83	105,082	2,244	105
2004	5.84	110,073	2,200	107
2005	5.87	113,295	2,117	113
2006	6.41	109,593	1,912	120
2007	6.34	97,115	1,855	123
2008	6.03	81,456	1,830	115
2009	5.04	75,973	1,987	112

Table 5. Ratio of multiple list sales to foreclosure deeds in 18 Michigan markets, 2000–2010

County	Ratios by Year											Change High to Low (%)	Change Peak Price (%)
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010		
Allegan	46.08	26.41	24.29	24.15	21.44	16.21	12.33	10.40	7.89	6.19	7.03	85.58	73.24
Bay	11.05	8.75	6.57	6.79	7.68	6.34	3.46	3.47	2.63	3.44	2.68	76.17	42.64
Branch	7.10	5.01	4.08	4.03	4.07	3.34	2.84	1.94	1.76	2.21	1.83	75.24	52.97
Calhoun	6.84	4.00	4.31	3.19	3.18	3.23	1.97	1.17	1.44	1.68	1.51	78.94	52.74
Emmet						12.22	6.45	3.14	2.65	2.24	2.33	81.70	47.19
Genesee	5.15	4.45	4.15	3.77	4.37	3.43	1.77	1.51	1.48	2.28	1.74	71.17	33.39
Hillsdale	7.24	4.88	3.85	3.16	3.18	3.29	2.51	1.72	1.44	1.96	1.62	80.08	65.33
Ingham	16.88	16.50	14.40	24.02	12.39	8.84	4.22	2.86	2.79	3.26	2.91	83.49	47.65
Jackson	7.71	6.54	3.79	3.49	3.72	3.37	1.97	1.25	1.50	2.06	1.75	83.79	56.37
Kalamazoo	18.33	13.65	17.13	9.72	10.79	7.58	5.71	4.00	3.72	3.70	3.11	83.02	68.83
Kent	18.06	14.85	11.53	11.52	10.83	9.40	4.67	3.24	2.40	3.51	2.84	86.69	74.16
Lenawee	14.69	7.12	6.10	5.14	5.54	5.09	2.90	2.07	1.68	2.46	1.51	88.56	62.28
Livingston	28.07	21.79	11.96	13.62	11.46	10.63	3.61	1.95	1.53	2.03	1.97	94.53	59.19
Macomb	36.06	24.72	16.18	12.88	16.00	12.12	2.44	1.43	1.00	1.56	1.16	97.22	55.62
Saginaw	8.65	7.01	5.82	5.02	4.42	4.02	2.14	1.68	1.62	2.67	1.82	81.25	53.50
St. Joseph	7.70	3.52	3.48	4.07	4.55	3.76	3.21	2.40	1.64	2.14	1.93	78.65	40.98
Shiawassee	7.36	6.59	4.87	4.31	4.53	3.78	1.93	1.59	1.20	1.73	1.14	84.53	38.40
Washtenaw	33.59	24.81	16.07	13.72	12.98	8.34	4.76	2.67	2.10	2.50	2.20	93.73	75.18
Median	**11.05**	**7.12**	**6.10**	**5.14**	**5.54**	**5.71**	**3.05**	**2.01**	**1.66**	**2.26**	**1.88**	**83.25**	**54.56**
Mean	**16.50**	**11.80**	**9.33**	**8.98**	**8.30**	**6.94**	**3.83**	**2.69**	**2.25**	**2.64**	**2.28**	**83.63**	**55.54**

Point at which prices dropped below the preceding high price in each market

Lowest ratio below the threshold point

Dominant Choice of Financing

Each purchase financing category is expressed as a percentage of all financing reported within the market. Thus, if there are 100 sales and 60 are reported as conventional financing, then conventional loans are illustrated as 60 percent of the market. Since there are more than four types of financing reported in the Saginaw County market (figure 3), the sum of the percentage shown for each financing category does not add up to 100 percent. However, the four financing choices shown constitute more than 80 percent of all transactions and may represent approximately 90 percent of the market in some years (see 1977). Some minor forms of financing that were omitted include buyer assumptions of existing mortgages, sale financing listed as *other*, and *blended* or other creative financing techniques.

The argument can be made that the patterns for choice of financing were so similar across the U.S. markets examined (Bay and Genesee Counties, Michigan; Fargo, North Dakota; Saginaw, Michigan; and Sioux Falls, South Dakota), that they constitute strong evidence supporting the conclusion that, in the United States at least, change in preferred choice of financing within a real estate market is a reliable indicator of market equilibrium or disequilibrium. The other statistical tests performed in this study support that proposition. Further, when a decision on market equilibrium is based on participant choice of financing and average market price, reliability increases enough to factually conclude a market either is at equilibrium or is not. Other researchers should investigate this proposition.

Cash Sales

Interestingly, cash sales did not statistically correlate with national mortgage rates. This finding suggests that for markets at equilibrium, cash sales are typically unique events driven by factors other than terms of financing.

The exception occurs when foreclosure activity in the decade of the 2000s is examined. Those exceptions are the domination of cash sales in Bay County (figure 5) and in Saginaw County (figure 13) in the late 2000s. In the case of foreclosed properties, so many inexpensive foreclosed properties became available that other properties had to be offered at lower sale prices to be competitive. The impact was on the supply side of the market. In contrast to the number of studies that have focused on the impact of a foreclosed property on other nearby properties, this study sought some metric that would indicate if and when the aggregate number of foreclosures in a market could affect (average) sale prices across a market.

Such a metric was found in each of 18 Michigan markets. It was the ratio of

properties sold through an MLS that was dominant in a market to the number of inexpensive properties entering the market as commercial lender foreclosures, more concisely, the ratio of annual MLS sales to deeds of foreclosure. Of the 18 MLS markets studied in the state of Michigan, the median ratio of MLS sales to foreclosure deeds was 11:1 during market equilibrium; the mean ratio was 16.5:1. However, with the exception of one county, when the median ratio approached 3:1 or less, housing prices collapsed. The one exception was the county that had very few foreclosures traditionally (40 MLS sales for every foreclosure). Prices changed dramatically when that county registered a ratio below 7:1.

Correlation by Time Period

Twenty metrics were identified within the Saginaw County market that statistically correlated with average annual market price. Following verification of cross-market similarities, these metrics were assigned to four fundamental categories: affordability, choice of financing, demand, and supply.

The 20 metrics and their correlation with average annual transaction price are shown in Table 6. Thirteen metrics contained sufficient data for multiple regression analysis for the full time period of the Saginaw County study: Consumer Price Index (CPI), number of properties sold annually, Freddie Mac rate, financing via loan assumptions, local and national unemployment statistics, seller-backed financing, cash sales, government-backed financing, DOM, conventional financing, other financing, and average weekly wage. The four-decade period began and ended with conventional loans being used more than 40 percent of the time with an average use of 48 percent and a peak use of 76 percent. Financing by cash and land contract exceeded 40 percent when the markets lost value.

Figure 13. Type of financing as percentage of sold properties in Saginaw County, Michigan, 2003–2009

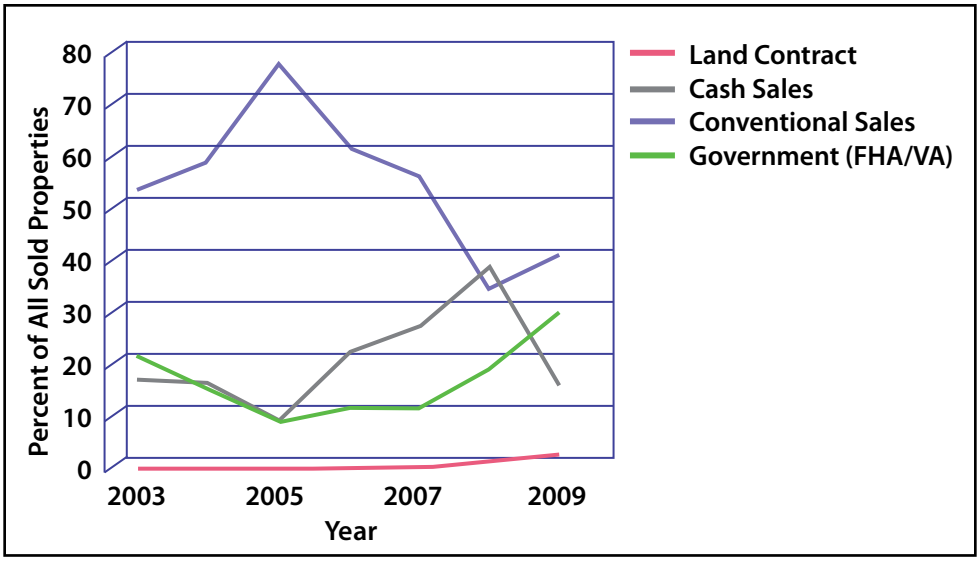


Table 6. Results of *t* test for 20 metrics correlating with average transaction price in Saginaw County, Michigan, 1974–2009

Metric (alphabetized)	Data Years	Pearson Correlation				Category
		All Years 1974–2009	First Period 1974–1985	Mid Period 1986–2005	Last Period 2001–2009	
County Average Adjusted Gross Income	24	Partial Data		0.98632	−0.34006	Affordability
Consumer Price Index (Detroit)	34	0.93583	0.97360	0.99232	−0.61180	Affordability
Annual Personal Bankruptcy Filings	30	Partial Data		0.94389	0.05566	Affordability
Annual "Solds" Reported by MLS	34	0.71345	−0.26748	0.85426	0.52973	Demand
Freddie Mac Annual Average 30-Year Rate	34	−0.69618	0.83107	−0.95382	0.44485	Affordability
Financing—Assume an Existing Loan	34	−0.63380	0.69024	−0.80858	Not Used	Financing
National Unemployment Rate	34	0.63358	0.33644	−0.48448	0.11016	Affordability
Financing—Seller Land Contract	34	−0.57783	0.61474	−0.92869	−0.86537	Financing
Foreclosure Deeds Annually	28	Partial Data		0.82912	−0.50112	Supply
Financing—Cash (No Financing)	34	0.53709	0.50132	0.23045	−0.51829	Financing
Financing—Government (FHA/VA/FmHA)	34	0.51642	−0.21084	0.08955	−0.65961	Financing
County Average Unemployment Rate	34	0.43075	0.33370	−0.25670	−0.60565	Affordability
Average Labor Force Hours Worked	8	Partial Data				Affordability
Household Debt (Federal Reserve)	11	Partial Data			−0.28949	Affordability
Ratio of Annual MLS Sales to Foreclosures	28	Partial Data		−0.50999	0.46921	Supply
Days from List to Sale (Days on Market)	34	0.24680	0.71396	−0.57677	−0.17185	Demand
Financing—Commercial Loan (Conventional)	34	0.22499	−0.75000	0.64096	0.87794	Financing
Financing—Reported as Other	34	0.07426	0.62273	−0.49336	−0.35102	Financing
Difference between List and Sale Price (Discount)	34	Partial Data	−0.72157			Demand
Weekly Wage (Averaged Statewide)	34	0.94166	0.96714	0.99605	−0.56802	Affordability

By categorizing the metrics, multiple signals of a change in general market conditions become clearer—enough to nail down a judgment of a market at equilibrium or disequilibrium. However, dominant choice of financing is clearly the salient indicator. In the equilibrium condition, the market has no unusual constraints and operates freely. Such a market also accommodates the economic idiosyncrasies typical of individual real estate transactions. In other words, the market still has shrewd buyers and uninformed buyers, shrewd sellers and uninformed sellers, people limited in financial resources, and people with abundant resources. However, these limitations affect a unique transaction; in aggregate, the market behaves in a normal fashion.

The first of the three time periods was 1974–1985. All choices of financing occupied less than 20 percent of the market except conventional and land contract financing. Land contracts averaged 21 percent of transactions for the period, peaked at 50 percent of all transactions, and were used in 16 percent of 1974 and 20 percent of 1985 transactions. During the period 1974–1985, the best fitting measures of change by category were affordability (CPI), demand (number of properties sold), financing (land contract/seller financing), and supply (no unique metric met threshold criteria).

The second time period, the middle period, was 1986–2005. It was characterized by consistent use of conventional mortgages (more than 40 percent) with competing financing choices being utilized individually in less than 20 percent of transactions, except for government-backed financing (FHA, VA, FmHA loans). Government-backed financing exceeded 20 percent of all transactions in five years, peaking at 28 percent. The average use of government financing during this period was 18 percent. The average use of conventional financing was 54 percent. Conventional financing never fell below 42 percent of the market and in three years exceeded 60 percent of the market. Metrics available for comparison with average annual sale price include 17 of the 20 measures. The three missing measures were difference between listing and sale price (discount), average household debt, and average hours worked weekly. Metrics were available for all four categories (supply, demand, affordability, and financing). The best fitting measures of change by category were affordability (CPI), demand (number of properties sold), financing (land contract/seller financing), and supply (annual foreclosure deeds). These selections resulted from the regression analysis and were based upon the lowest error rate, highest probability, and R^2 statistics.

By categorizing the metrics, multiple signals of a change in general market conditions become clearer—enough so to nail down a judgment of a market at equilibrium or disequilibrium.

The ending period was 2001–2009 inclusive for statistical purposes, because the impact of personal bankruptcies, mortgage foreclosures, and other factors affecting loan origination and affordability manifested themselves only for less than five years of the study. The longer time period offers a more robust analysis by encompassing *pre-* and *post-change* dynamics. This period begins before evidence of a price decline and a pending fiscal crisis for commercial and governmental housing lenders becomes noticeable. Housing prices within the Saginaw County market peaked in 2005 at an average annual sale price of $113,000. In the same year, cash was used to finance a sale in 9.9 percent of transactions, and conventional loans were used in 78.7 percent of transactions. However, the period is characterized by the rise of the cash sale as the dominant financing method. In 2008, 39.28 percent of all completed transactions were consummated as cash sales, and only 35.21 percent were conventional loan-financed transactions. This period is also characterized by a significant reduction of the average annual sale price of residential properties. By 2009 the average annual sale price had declined by $37,322 to $75,973. This represented a loss of 32.9 percent from 2005. Personal bankruptcies reached dramatic highs in both 2005 and 2009. An examination of data from the Bay County, Michigan, market reflects similar dynamics.

Importantly, the ratio of homes sold through the MLS to the number of mortgage foreclosure deeds recorded in 2005 dipped to less than three sales for every new foreclosure. The data in table 6 show that a ratio of less than three MLS sales to every new foreclosure appeared in each period with reduced average annual sale price: the first and last periods of this study. In contrast, the middle period experienced continually increasing property values. During the middle period, the average of all ratios of annual properties sold to the number of foreclosures approximated 10.6:1 and rose as high as 20.2:1.

Conclusion

The market value of a specific parcel of real estate can be directly affected by an economic force arising from outside the parcel (an externality). The effect has been recognized since at least the fifteenth century in Europe. Modern research confirms similar effects from external forces in other regions of the world.

External forces act (1) within a geographically limited area relatively close to the point of origin and (2) across an entire real estate market or across multi-

ple markets. This research study distinguishes both forms of influence; using an analysis of property foreclosures and an analysis of high mortgage rates. Examples of market-wide impacts from high interest rates are detailed within two markets, Saginaw and Bay Counties, Michigan. The data are supported by cross-market similarities from three U.S. states (Michigan, North Dakota, and South Dakota). Detailed evidence of the market-wide influence of an abundance of low-priced properties (foreclosures) was found in 18 Michigan markets.

Rising mortgage costs in the 1980s drove participants in markets in all three states to change their preferred method of transaction financing. As money costs rose, the dominant use of commercial lender financing was abandoned for seller-financed transactions. An abundance of low-priced housing had a different effect. Vacant, lender-foreclosed properties affected value only in proximity—until the number of foreclosures became very large compared to the number of properties being sold. Then prices were lowered across the entire market. The threshold point at which a market-wide reduction ensued was often at a ratio of three or four new foreclosures for every property sold annually within the market.

The marker that best identifies a transition from equilibrium to disequilibrium, and vice versa, was dominant choice of financing. When commercial lender loans were the most used financing choice, prices rose. Economic forces correlated with price change were (1) a rise in the cost of money such that convention loan payment schedules became unaffordable and (2) the introduction of many low-priced properties into a market's housing supply. Both acted as economic forces that disrupted market equilibrium resulting in lower average annual prices and a change in the most utilized transaction financing. When a usually minor type of financing became the dominant type of financing, the average annual sale price dropped. Disequilibrium existed.

The marker that best identifies a transition from equilibrium to disequilibrium, and vice versa, was dominant choice of financing.

Basic research in a market can be conducted using multiple regression techniques in commonly available spreadsheets. Excel® was used in this study as an inexpensive research tool. The spreadsheet identified potential variables from a pool of market statistics. Variables were placed into four categories: affordability, demand, financing method, and supply. Using transaction price as the dependent variable, the four best choices for an independent variable in each category changed, depending upon whether the market was in equilibrium or disequilibrium. It is believed the methodology used in this research can be replicated in other markets to provide similar results. The suggested analytical method is summarized as follows:

1. Identify patterns in the use of transaction financing over several decades.
2. Compare that pattern with patterns in other markets.
3. Verify correlation between the identified forms of financing and a national index of lending rates.
4. Identify relevant metrics in the market to be analyzed.
5. Select the most reliable metric for identifying market-wide changes in property value.

I hope that this article will spur more research. Its data and a more extensive description of the analyses can be found in a 2011 working paper published on the internet by Michigan Property Consultants L.L.C. (Turner 2011) and in an article in *The Michigan Assessor* (Turner 2012).

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Key Definitions

Cash Sale—A sale of real estate in which there is no financing of any kind and the buyer pays in U.S. dollars.

Conventional Financing—A sale of real estate in which the buyer secures a loan from a commercial lending institution to complete the transaction. Typically between 5 and 20 percent of the transaction price is required as the buyer's cash obligation.

Fair Market Value—The definition promulgated by IAAO.

FHA Loan—A loan financed through lenders with the participation of the U.S. Federal Housing Administration (FHA), often enabling each lender to provide more favorable terms to the recipient than the company's alternative financing.

FmHA Loan—A loan financed through the Farmers Home Administration (FmHA), formerly an agency within the U.S. Department of Agriculture (USDA). In 1994, the USDA reorganized transferring FmHA's farm loan programs to the then newly formed Farm Service Agency

Foreclosure Sale—A forced sale resulting from default of a buyer on a loan used to finance a transaction.

Land Contract Sale—A sale of real estate financed by the seller through the acceptance of an agreed-upon down payment, a periodic payment schedule, interest rate, and time period.

Multiple Listing Service (MLS)—An entity formed by a group of cooperating real estate firms for the purpose of marketing and sharing information about property listings, sales, and other data;

in the United States, frequently a local Board of Realtors.

Real Estate Market—A geographic area encompassing demand for real estate and, for this research, served primarily by a single MLS.

VA Loan—A residential loan financed through guarantees by the U.S. Department of Veterans Affairs to commercial lenders that enables each lender to provide more favorable terms to a recipient than a company's alternative financing.

About the author

Joseph M. Turner is certified as a Michigan Assessment Administrator. He was an employee of the city of Saginaw, Michigan, Assessor's Office and currently serves as chairman of the Saginaw property tax Board of Review. His experience includes working as a fee appraiser. He has taught courses for assessors, given presentations at IAAO conferences, and published articles on matters of property taxation. He has been qualified as an expert witness before Michigan district and circuit courts and, by state committee request, presented information on the history and current administration of special assessment taxes. He was honored by the U.S. House of Representatives for his work in economic development. Mr. Turner obtained an associate's degree in science from Delta College, a Bachelor of Arts Degree from Saginaw Valley State University, and a Certificate in Real Estate (with academic distinction) from the University of Michigan.