# Finding And Explaining "Underbuilt" Residential Construction Markets

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There is no substitute for detailed knowledge of local real estate markets. However, such information is expensive to collect and process. This paper offers some simple techniques to screen a large set of markets (153 in this first effort), and identify markets with potential for further and more detailed analysis.

Of our 153 metropolitan areas, the median number of permits per thousand population per year over the study period (1980 to 1993) was 5.8. However there was a large amount of variation in this data. Las Vegas had slightly over 22 permits per thousand, as did Ft. Myers, Florida. West Palm Beach had about 21 permits per thousand, Orlando 18.5 permits per thousand, and Melbourne 16.4 permits per thousand. At the other end of the spectrum, Great Falls and Charleston had only slightly over 1 permit per thousand over the period. New York (1.5 permits per thousand), Jersey City (1.8 permits per thousand), and Peoria (1.9 permits per thousand) were among other metropolitan areas with very low levels of housing activity.

Turning to the fraction of activity in multifamily, 91 percent of the permits in Jersey City during the study were multifamily permits. Other metropolitan areas with high rates of multifamily to total permits included New York (.69), Los Angeles (.65), Odessa (.63), and Waco (.59). Among the metropolitan areas with the lowest multifamily permits (i.e. high proportions of single family activity) were Rochester (.14), Nassau (.15), Great Falls (.15), York (.16), and Richmond (.17).

A supply and demand model was developed, incorporating permits and the share multifamily as dependent variables. Independent variables include population and income, geographical constraint, and regulation (See CULER Working Paper No. 94).

The key to understanding the usefulness of the model is to realize that actual results --whether total activity or percent multifamily-- are only loosely related to the models' predictions. If, for example, we observe markets with high rates of construction, does that mean that market has likely become over built; or, given the economic forces driving construction in that market, would we have expected an even higher rate of construction? Comparing the actual to the model's prediction allows us to differentiate.

For example, Las Vegas has a very high rate of construction. It also has a high rate of construction predicted by the model. But the prediction is significantly less than actual, by over five units per thousand population per year. This suggests Las Vegas may now be reaching saturation. On the other hand, Riverside is another market with a very high rate of construction; but the model's prediction is still significantly higher. Our simple screening model suggests Riverside is a potentially underbuilt market.

Looking simply at the difference between predicted and actual activity from the model, the "most overbuilt" markets are Las Vegas, Middlesex, West Palm Beach, Ft. Myers, and Boise. The "most underbuilt" markets --or markets with greatest potential, according to our screening criterion-- are Stockton, San Jose, Los Angeles, Riverside, and Salinas.

Now turning to the model of the share of activity in multifamily, the paper finds that Jersey City, Ft. Lauderdale, Odessa, Waco, and San Antonio have much higher shares of multifamily than the model predicts. Markets with underperforming (to date) multifamily sides of the market include Great Falls, Washington, Rochester, Richmond, and Reno.

Figure 1 presents a convenient summary of the two results (using the small or demand side model). The vertical axis contains the actual level of permits over the period less the model's predictions. A value of zero means the actual and predicted are equal. A high positive value suggests that the market may be overbuilt. A large negative value suggests the market may yet be underbuilt, at least according to demand side criteria.

The horizontal axis is the actual minus predicted multifamily share. Large positive values suggest a much higher share of multifamily activity than the model predicts; large negative values suggest "under multifamilied" markets.

According to our simple screening criteria, markets with the greatest potential for multifamily development in the near future would be: markets which have less housing built than the model predicts, and markets with a lower share in multifamily than the model predicts. That would be represented by markets in the third quadrant of the graph, where values of both residuals are negative. Washington, Modesto, Vallejo, Stockton, Salinas, and Riverside would be among the markets in this category. On the other hand, markets like West Palm Beach and Ft. Myers, and to a lesser extent Dallas, Odessa and Ft. Lauderdale, have been built faster than the model predicts, and higher shares in multifamily; these markets would poor candidates for future multifamily construction, according to our screening criteria.

The large number of metro areas makes clear identification of some of the cities difficult in Figure 1. Figure 2 presents just the third quadrant of Figure 1; that is, only markets which meet our rough and ready screening criteria of having actual activity below predicted activity, and actual multifamily share below predicted multifamily share.

Ultimately, many users of a model like the one contained in the paper are less interested in whether markets are "under" or "over" built in the abstract, and more interested in whether these measures signal future activity or differential profit opportunities. We would argue that most real estate professionals are more interested in the latter --profit or returns-- but that there is some interest in the former, for example among planners.

For some measure of output, if the market is self correcting, eventually we would expect (e.g.) "underbuilt" markets to exhibit above average activity in the future. However, the timing of this shift is presently unknown. Other research (Malpezzi 1996) demonstrates that housing markets often exhibit serial correlation in output, and that the nature and strength of this autocorrelation varies significantly by market.

Our model is calibrated with 1980-1993 data. We obtained data on 1994 permits (total and multifamily) and examined the correlation between output and various measures of residuals (measures of “over” and “under” builtness). Results varied but were often positive, suggesting one period ahead is too short to escape the serial correlation in most markets. With a longer time series ahead of model calibration, the dynamics of output adjustment to our measure of disequilibrium can be more carefully studied.

We then examined profits or returns. For some profit or return measure, we expect that if the model residual is positive (negative), the market is overbuilt (underbuilt), and prices/returns/profits fall (rise).

We collected data on apartment prices from the National Real Estate Index from 1985 to 1993, and on rents from the 1980 and 1990 Census. We used changes in these variables as our proxies for returns. We examined several specifications, and all had the expected (negative) sign, between the residual and the return proxy. These results validate the model.