FACTORS IMPACTING PRICE FOR RETAIL SPACE IN HOUSTON

Michael E. Hanna, University of Houston-Clear Lake Stephen C. Caples, McNeese State University Charles A. Smith, University of Houston – Downtown Charles P. Rollins, Houston, Texas

ABSTRACT

This paper investigates the demand for retail space in the Houston area from 1981 to 2006. Economic factors such as the employment level, new retail space constructed, vacancy rate, and average price per square foot are presented. Relationships between these variables are studied to determine which variables might be most helpful in forecasting future price for retail space.

INTRODUCTION

This paper investigates the demand for retail space in the Houston area from 1981 to 2006. Data is presented on economic factors such as the employment level, new retail space constructed, change in retail space absorbed into the market, vacancy rate, and average price per square foot. Relationships between these variables are studied to determine which variables might be most helpful in forecasting future price for retail space.

LITERATURE REVIEW

Estimating future price for retail space has historically presented problems to practitioners in the field. Supply and demand are constantly at work in the market place. The creation of new jobs in an area increases the demand for retail space, which would normally result in higher prices for the space. This higher price spurs additional construction of retail space, which increases the supply of retail space. The increased supply would normally provide downward pressure on the price. There is a constantly changing dynamic economy.

Malizia (1991) recognized that long-term demand-side forecasting models needed to include economic development variables in forecasting demand for retail space. Wheaton and Torto (1990) linked job growth to industrial supply and demand. There is a plethora of empirical data linking employment to various factors influencing demand for real estate, or methods and models to forecast one aspect of real estate or another. Valente, Wu, Gelfand and Sirmans' (2005) present a spatial model for predicting apartment rents. Lentz and Tse (1999) present models to relate the performance and needs of the goods market to the demand for commercial real estate.

To effectively forecast retail space demand and the price for that space, a relationship needs to be established between readily available employment information and retail demand forecasts. Lentz and Tse (p. 231) noted, "The commercial real estate market is frequently observed to be in an extended state of disequilibrium." Since there is a time lag between the beginning of the construction cycle and the time when the finished space is available for rent, it can be difficult to make an accurate estimate of future space demands. It is common to overbuild or fail to build enough space simply because the market changed at some point during the construction cycle. The decision to build new retail space should be made after weighing expectations of future demand, retail space under construction, absorption rates and the amount of vacant space already in the market. Lentz and Tse (p. 248) observed," With future demand uncertain, the supply (quantity) of space and the realized demand for space may not match. If the supply is less than the realized demand, the space producer will be able to lease out all the new space. On the other hand, if the supply is greater than the realized demand, the excess supply will cost the space producer holding costs on the vacant units." With this background, we investigate the market for retail space in the Houston area from 1981 to 2006.

THE DATA

Employment data for the Houston area was collected from the Texas Employment Commission, and retail space market data was provided by REVAC, Inc. All data was located either online or in print form. The Texas Workforce Commission publishes quarterly and annual economic statistics on their website, separated by city and type of employment. This information was used to determine overall Houston non-agricultural employment, changes in the Consumer Purchasing Index, and the percentages of goods producing and manufacturing jobs. These data provide a record of historical growth, and are helpful in making estimates of future

Journal of Economics and Economic Education Research, Volume 8, Number 2, 2007

economic growth. Data relating to the retail space market was also collected. The most critical for our purposes is the absorption of retail space - the difference between space built and space leased. Additional variables include market vacancy rates, average rent per square foot and the amount of new space constructed.

Table 1 contains historical employment data for the Houston metropolitan area. These data are available online, and similar data are available in most major cities. These data are usually updated several times per year. A practitioner in the field can use these to analyze and draw relationships between the variables. Table 1 presents employment data for the Houston area from 1975 to the present. While total employment over the years has fluctuated, there has been a trend of overall growth in the economy since the recession of the 1980's. Since 1988, the Houston economy has grown at a rate of 2.47% per year. This is an average increase of almost 45,000 new jobs per year. While overall employment is up, employment in goods producing and manufacturing jobs has seen a decline over the last decade. A similar pattern has existed for the rest of the United States because of a shift to a more service oriented and knowledge-based economy.

Table 1. Houston Employment Data (In 1,000s)									
Year	Total Wage & Salary Jobs	Goods Prod. Jobs	Goods Prod. As %	Mfg Jobs	Mfg As % of Goods	Change in CPI			
1975	993	309	31.1%	170	55.1%				
1976	1,057	332	31.4%	176	53.0%				
1977	1,126	351	31.2%	182	51.8%				
1978	1,229	387	31.5%	199	51.6%	9.4%			
1979	1,318	415	31.5%	214	51.7%	13.2%			
1980	1,399	440	31.5%	225	51.2%	12.5%			
1981	1,517	496	32.7%	249	50.3%	10.0%			
1982	1,541	482	31.3%	230	47.7%	6.9%			
1983	1,444	402	27.9%	181	45.1%	2.8%			
1984	1,476	390	26.5%	178	45.5%	2.7%			
1985	1,479	368	24.9%	173	47.0%	2.1%			
1986	1,410	320	22.7%	153	48.0%	-1.0%			

Table 1. Houston Employment Data (In 1,000s)									
Year	Total Wage & Salary Jobs	Goods Prod. Jobs	Goods Prod. As %	Mfg Jobs	Mfg As % of Goods	Change in CPI			
1987	1,386	294	21.2%	146	49.8%	2.5%			
1988	1,448	310	21.4%	156	50.5%	2.8%			
1989	1,515	328	21.7%	164	50.0%	4.1%			
1990	1,605	397	22.2%	201	49.4%	5.7%			
1991	1,630	401	22.5%	206	49.7%	3.7%			
1992	1,631	389	22.1%	202	50.0%	3.2%			
1993	1,659	385	21.1%	202	51.2%	3.3%			
1994	1,704	397	21.0%	207	50.2%	3.4%			
1995	1,756	411	21.1%	216	50.4%	1.4%			
1996	1,981	427	21.6%	225	52.7%	2.1%			
1997	2,064	443	21.5%	235	53.0%	1.9%			
1998	2,167	467	21.6%	243	52.2%	1.0%			
1999	2,202	457	20.8%	235	51.5%	1.3%			
2000	2,254	465	20.7%	231	49.7%	3.7%			
2001	2,293	477	20.8%	233	48.9%	3.0%			
2002	2,288	465	20.3%	221	47.6%	0.3%			
2003	2,274	448	19.7%	210	46.8%	2.8%			
2004	2,289	440	19.3%	207	47.2%	3.5%			
2005	2,350	453	19.3%	212	46.9%	3.7%			
2006	2,477	480	19.4%	217	45.3%	0.7%			

Table 1 indicates moderate to strong economic growth in the Houston job market. This employment growth should cause demand for existing retail space to increase. The question is - by how much? Table 2 contains retail space market data which can be used to determine the connection between job growth and retail space demand. Some relationships become obvious once the data are assimilated. For instance, there is a relationship between vacancy rate and the percentage change in

the market rent. Table 2 also shows that overbuilding has occurred in the last several years, since construction has outpaced absorption. The excess retail space in the market has begun to cause a slow down in the increase in average market rent. Meanwhile, the vacancy rate has been increasing yearly despite substantial job growth in the market.

	Table 2. Houston Retail Market Data										
Year	Total Wage & Salary Jobs	Emplymnt Change	% Change	Absorption in Square Feet	New Square Footage	Vacancy Rate	Rent/Sq.Ft	% Change			
1975	993										
1976	1057	64	6.5%								
1977	1126	68	6.4%								
1978	1229	103	9.2%								
1979	1318	89	7.2%								
1980	1399	80	6.1%		3621						
1981	1517	118	8.5%	4808	5402	9.5%	\$9.96				
1982	1541	24	1.6%	6314	2317	6.0%	\$11.40	14.5%			
1983	1444	-97	-6.3%	4261	5524	2.5%	\$12.60	10.5%			
1984	1476	31	2.2%	5075	11887	12.8%	\$13.10	4.0%			
1985	1479	2	0.2%	3267	8756	16.7%	\$13.14	0.3%			
1986	1410	-69	-4.6%	-1565	3404	19.4%	\$12.59	-4.2%			
1987	1386	-25	-1.7%	-1363	388	22.5%	\$11.06	-12.2%			
1988	1448	61	4.5%	1228	1324	22.5%	\$11.30	2.2%			
1989	1515	67	4.7%	1978	884	21.6%	\$11.92	5.5%			
1990	1764	90	5.9%	967	1110	21.6%	\$13.19	10.7%			
1991	1793	24	1.5%	2883	1025	10.3%	\$13.70	3.9%			
1992	1795	1	0.1%	4251	2836	17.4%	\$13.87	1.2%			
1993	1827	27	1.7%	2670	2069	15.9%	\$14.30	3.1%			
1994	1815	45	2.7%	4835	4520	15.1%	\$14.59	2.0%			
1995	1934	52	3.1%	2751	3383	14.8%	\$15.50	6.2%			
1996	1981	39	2.3%	1945	2451	15.0%	\$15.52	0.1%			

Table 2. Houston Retail Market Data										
Year	Total Wage & Salary Jobs	Emplymnt Change	% Change	Absorption in Square Feet	New Square Footage	Vacancy Rate	Rent/Sq.Ft	% Change		
1997	2064	82	4.2%	4091	1836	13.8%	\$17.13	10.4%		
1998	2167	103	5.0%	4090	1470	11.5%	\$17.68	3.2%		
1999	2202	34	1.6%	6701	3871	7.5%	\$18.45	4.4%		
2000	2254	52	2.4%	4845	3934	6.0%	\$18.33	-0.7%		
2001	2293	39	1.7%	6294	9218	7.0%	\$19.07	4.0%		
2002	2288	-6	-0.2%	-2975	4394	11.5%	\$18.33	-3.9%		
2003	2274	-15	-0.6%	1976	5430	13.3%	\$19.10	4.2%		
2004	2289	15	0.7%	3568	4813	13.5%	\$19.15	0.3%		
2005	2350	61	2.7%	722	3211	14.7%	\$19.38	1.2%		
2006	2477	73	3.1%	1890	3045	15.2%	\$19.52	0.7%		

There will always be some vacant space in the market. This is sometimes called the natural vacancy rate. A vacancy rate of about 14 percent in the Houston area since the mid-80s is observed in the data. The average annual retail space constructed per year in Houston has averaged 3.2 million square feet, while the absorption rate has averaged only 2.9 million square feet per year.

As can be seen in Figure 1, construction lags behind absorption, and it seems to react to changes in absorption. Perhaps a better understanding of forecasting retail space demand would benefit the market as a whole. This might bring about a decrease in the market vacancy rate, and the average rents may increase.

Figure 2 provide the changes in price per square foot and the retail space vacancy rate for the years 1982-2006. The 1980s were difficult years for the Houston economy. Employment fell, the vacancy rate increase, and prices dropped as providers of retail space offered price incentives to keep their space occupied.



Figure 1. Absorption and Construction of Retail Space in Houston Market

Figure 2. Change in Rent and Vacancy Rate



Journal of Economics and Economic Education Research, Volume 8, Number 2, 2007

THE MODEL

To predict the price of commercial retail space, the use of a regression model was investigated. The following variables which are candidates for predicting the price include the change in employment, the change in square footage of space absorbed, the vacancy rate, and the change in space available each year. These same variables are also lagged one year to see if there is a lag in the impact. The variables are defined as follows:

 $P = Price \ per \ square \ foot$ $E = Change \ in \ employment$ $E_1 = Change \ in \ employment \ lagged \ l \ year$ $F = Change \ in \ square \ footage \ of \ space \ absorbed$ $F_1 = Change \ in \ square \ footage \ of \ space \ absorbed \ lagged \ one \ year \ (F_1)$ $V = Vacancy \ rate \ lagged \ one \ year \ (V_1)$ $S = Change \ in \ retail \ space \ available \ (S)$ $S_1 = Change \ in \ retail \ space \ available \ lagged \ l \ year \ (S_1)$

With these variables, we have

$$P = f(E, E_l, F, F_l, V, V_l, S, S_l)$$

While price is a function of all of these variables, several of these independent variables are correlated with other independent variables. Minitab was used to analyze the data, and a Best Subsets stepwise regression model was run on these data to determine which of these variables were significantly contributing to the price of retail space. The overall best model included E, F, F₁, V, and V₁. The equation is

$$P = 26.2 + 0.0414 E - 0.631 F - 0.435 F_1 - 0.375 V - 0.276 V_1$$

The coefficient of determination is 0.53. The positive coefficient for E is expected as additional jobs would typically result in an increase in demand for retail space. The negative coefficients for the other variables are also to be expected. As a decrease in price is usually associated with an increase in absorption (number of square feet occupied), we would expect the coefficients for F and F_1 to be negative.

Similarly, as the vacancy rate (V, and V_1) increases, the price would normally decrease.

SUMMARY AND CONCLUSIONS

If the relationship between the economic variables in the Houston real estate market can be better understood, perhaps overbuilding could be avoided. This reduction in overbuilding will have positive effects on the retail space market as a whole, as the surplus of vacant retail space will be absorbed and the vacancy rate will decline, raising the average rent commanded by the market. However, some builders may still choose to overbuild, as vacant land generates no revenue. These builders feel that they are better served by building the retail space and having it partially vacant as opposed to building less space or holding vacant land. While this could be a profitable choice by the individual producers of retail space, the overall market may be hurt as rents may drop and vacancy rates may rise.

There are many factors that impact the price of retail space in the Houston market. The most important variables found in this study are change in employment for the current year, change in square footage of space absorbed for the current and previous year, and change in vacancy rate for the current and previous year. However, this model should not be expected to forecast with complete accuracy. With a coefficient of determination of 53%, the unexplained variability in price for retail space is 47%. While this model should help in predicting the price for retail space, further study needs to be performed to identify other variables that would generate better predictions.

REFERENCES

- Benjamin, John D., Glenn W. Boyle & C. F. Sirmans (1990). Retail Leasing: The Determinants of Shopping Center Rents. AREUEA Journal 18(3), 302-312.
- Lentz, George H. and K.S. Maurice Tse (1999). Supply Adjustments to Demand Shocks in the Commercial Real Estate Market. *Real Estate Economics* 27, 231-262.
- Malizia, Emil E. (1991). Forecasting Demand for Commercial Real Estate Based on the Economic Fundamentals of U. S. Metro Markets. *The Journal of Real Estate Research* 6(3), 251-265.

- Valente, James, ShanShan Wu, Alan Gelfand, and C.F. Sirmans (2005). Apartment Rent Prediction Using Spatial Modeling. *The Journal of Real Estate Research* 27(1), 105-136.
- Wheaton, William C. and Raymond G. Torto (1990). An Investment Model of the Demand and Supply For Industrial Real Estate. *AREUEA Journal* 18(4), 530-547.

www.alliedacademies.org

www.alliedacademies.org

Journal of Economics and Economic Education Research, Volume 8, Number 2, 2007

104