

above formula for $D_{commercial\ land}$ and $S_{commercial\ land}$ can be correlated^[7]. With this correlation, the formula for the price of commercial land p can be written as follow:

$$p = p(l, c, i, t, e, y, n, a, p_x)$$

As seen, there are a total of nine factors which affects the price p for the market of commercial land^[8]. The nine factors include: land prices l , prices of construction materials c , unchanged mortgages interests i , property taxes t , expected profits e , urban income y , urban population n , urban joviality a and price of noncommercial land produce p_x .

B Mathematical expression for the model development of commercial land prices

Through the analysis on the model of urban commercial land being done above, a formula derived to determine the practical price of commercial land $P_{commercial\ land}$ is formed as follow:

$$P_{commercial\ land} = a_0 + a_1 p_{land} + a_2 y_a + a_3 s_a + a_4 n + a_5 e + a_6 c + a_7 a_p + a_8 a_g + a_9 a_c + a_{10} a_s + a_{11} p_x + a_{12} u_a + a_{13} c_1 + a_{14} c_2 + a_{15} c_3 + a_{16} c_4 + u_0$$

As seen in the above equation, the variable on the left side is dependent also on $P_{commercial\ land}$, and the variables on the right are the factors affecting the other variable on the left. These variables being looked at mathematically is the crucial point in insuring objective profitability. Below shown in table 1 are the external factors and its mathematical significance.

A point to be noted here is that, through a stable virtual regulation, under the conditions of variables not changing, the external reasons that affect the land prices of different areas and geographical locations can be determined.

V. CONCLUSION

This paper analyzes a major reason why the local government difficulty implements the policy which suppresses the land prices, meaning that the government will have to break the win-win scene and to also control the shift in the slope of the supply curve. As soon as the number of investors decreases, the supply curve will revert to an equilibrium state's slope. This economic phenomenon's effectiveness is not on regulating the supply, but is exclude speculators from purchasing parties. On the other hand, on top of redefining the benefits equilibrium, the benefits equilibrium baseline is found through the

conclusion of the government's regulations on land prices (in mathematical terms). As for the new model, further studies will need to carry out error analysis and calibration of data. In the process of practical usage, further studies will also need to determine the multiple values of these variables.

TABLE1 THE MATHEMATICAL SIGNIFICANCE OF EACH VARIABLE AND CORRELATION COEFFICIENT IN THE MODEL OF THE COMMERCIAL LAND PRICE

商业用地价格表达式的各变量与相关系数的数学意义	方程特征	a_0	该函数方程的截距参数, 是否经过原点	
		u_0	该函数方程的随机扰动, 设计外的影响因素	
		$a_1 \sim a_{16}$	各变量的随机系数	
	实际的解释变量	宏观经济	$P_{土地}$	测量城市的土地价格
			y_a	城市居民平均工资
		s_a	城市居民人均储蓄	
		人口因素	n	非农人口数量(年末)
			e	人口自然增长率
		城市愉悦度	c	单位面积的房屋造价
			a_p	空气质量(好于2级天数的比例)
			a_g	城市绿化率
			a_c	城市犯罪率
			a_s	城市高等教育水平(高校数量)
			p_x	年度零售商品价格指数的变动程度
			u_a	城市的失业率
		控制变量	c_1	副省级城市
c_2	直辖市			
c_3	中部地区			
c_4	东部地区			

REFERENCE

- [1] Muth, R. The derived demand for urban residential land [J]. Urban Studies, 1971, (8):51-66.
- [2] Witte, A.D. The determination of interurban residential site Price differences: a derived demand model with empirical testing [J]. Journal of Regional Science, 1975, (15):351- 364.
- [3] Capozza, D.R. & Li, Y.M. Residential investment and interest rate: an empirical test of land development as a real option [J]. Real Estate Economics, 2001, 29(3):503- 519.
- [4] Capozza, D.R. & Shilling, J.D. Introduction to the special issue [J]. Real Estate Economics, 2005, 33(1):1- 3.
- [5] Davidoff, T. Labor income, housing prices, and home ownership [J]. Journal of Urban Economics, 2006, (59):209- 235
- [6] Deaton, A. & Laroque, G. Housing, land prices, and growth [J]. Journal of Economic Growth, 2001, (6):87- 105.
- [7] Potepan, M. Explaining intermetropolitan variation in housing prices, rents and land prices [J]. Real Estate Economics, 1996, (24):219- 245
- [8] Meikle, N. & Peng, L. Exploring metropolitan housing Price volatility [J]. Journal of Real Estate Finance and Economics, 2006, (33):5- 18.