An Analysis of the Influence of the Real Estate Industry on the Shanghai Economy

Lin Sun
Institute of Applied Economy
Shanghai Academy of Social Science
China

Abstract

This study uses a Shanghai regional computable general equilibrium (CGE) model to conduct a scenario simulation analysis on the influence of real estate from 2021 to 2025. The influence analysis includes the increase in demand and investment in real estate. The results indicate that the real estate demand rise on real and nominal GDP is negative. In contrast, with the total investment remaining the same, the increase in real estate investment has a significant negative impact on real GDP growth. The effect on nominal GDP is positive. Also, the increase in real estate demand and investment positively affects the transfer of Shanghai from the domestic market (ROC), and the latter has a more significant impact. Except for the real estate industry itself, increasing demand or investment in the real estate industry, the effect on the added-value of all other sectors is negative. Due to the crowding-out effect of investment or consumption, Shanghai's real estate demand or investment hurts the real GDP growth. The hypothesis that "Real estate leads to economic growth" is not established in Shanghai during the observation period.

Keywords: Shanghai Economy, Real Estate, CGE Model

1. Introduction

As a modern international metropolis and a global economic, financial, trade, and shipping center, Shanghai's real estate industry is developing rapidly. According to the Shanghai Social and Economic Development Bulletin, in 2021, Shanghai's real estate development investment will grow steadily, with an investment of 503.5 billion yuan, an increase of 7.2% over the previous year. Taking 2019 as the base period, the two-year average growth of 9.1%. Therefore, the real estate industry involves investment, production, and consumption; changes in its development scale have an essential impact on the economic growth of a country or a region. The following papers have studied the effects of real estate and real estate investment on economic growth.

Zhao et al. (2011) empirically analyze the impact of China's housing price changes on household consumption and economic growth based on the data from 1994 to 2011 to consider inflation. The results show that the real estate wealth effect is weak relative to the disposable income of urban residents. The impact of housing prices on promoting consumption is more significant in the long run than in the short run, and it tends to become stronger with time. The wealth effect of the short-term real estate market and the promotion effect of income on consumption are not significant.

Xu Xianchun, Jia Hai, Li Jiao et al. (2015) studied the role played by real estate in the growth of China's national economy with a comprehensive quantitative analysis of the three systemic fields of real estate investment products and consumption. The results show that moderate growth in real estate is of great significance for the healthy development of the national economy. However, if real estate grows either too fast or too slowly, it will affect the steady growth of the national economy.

Jing & Wang (2019) established models for the whole sample, regions, and periods to empirically analyze the impact of real estate investment on China's economic growth based on the panel data of 31 provinces and cities in China from 2000 to 2016. The results show that the impact effect of real estate investment on China's economic growth is higher in the relatively developed eastern and central regions. Since 2008, the impact on the east part has not changed much, the central area has increased significantly, and the western region has decreased dramatically. Real estate investment can drive economic growth to a certain extent. It is suggested that real estate control policies can be treated differently according to the development of different regions.

Gu et al. (2021) analyze the mechanism of the influence of real estate investment on economic growth through the real estate industry, non-real estate industry, consumption, and economic risks and uses panel data from 31 provinces in China from 2000 to 2017 for empirical investigation. The study found that during the observation period, real estate investment had a lower promotion effect on economic growth than non-real estate investment; the practical results of the national sample showed that real estate investment and economic growth showed an inverted "U" shape relationship, indicating that the increase in real estate investment will eventually hinder the economy. The empirical results of the sub-regional samples show that the northeast and central regions have the same trend as the national sample, showing an inverted "U"-shaped relationship. Real estate investment in the eastern and western areas has a significant positive linear relationship with regional economic growth.

The following papers have studied the impact of Shanghai's real estate industry and real estate investment on economic growth. Yang & Kong (2013) uses the Engle-Granger two-step method to conduct an empirical study on the interaction between real estate development investment and economic growth in Shanghai with the quarterly data of Shanghai's real estate development investment and GDP since 2003. The research results show that Shanghai's real estate development investment has a significant impact on the city's economic growth. Shanghai's hypothesis that "Real estate leads to economic growth" is established.

Zhou (2014) empirically studies the internal mechanism between real estate investment and economic growth in Shanghai based on economic data from the first quarter of 2005 to the second quarter of 2013. The results show a long-term equilibrium relationship between real estate development investment and economic growth in Shanghai. In the short term, real estate development investment and economic growth are Granger reasons for each other. The impact of real estate development investment is relatively small.

These studies mainly focus on real estate investment and economic growth. The studies mentioned above are econometric regression or statistical methods based on the analysis framework of partial equilibrium; they cannot describe the correlation between the driving force and pulling force of regional economic growth. Simultaneously, the studies mentioned above lack a description of the relationship between Shanghai's economy and the domestic market.

The regional economy is a complex system, and there are correlations among the factors affecting regional economic growth. On the supply side, there are labor input, fixed capital input, and improvement in total factor productivity, which impact economic growth, but they also interact with each other. On the demand side, export-related to the international market ROW (the rest of the world), transfer to ROC (the rest of China) related to the domestic market, household consumption, and investment impact economic growth. The supply side's driving force and the pulling force on the demand side are also mutually restrictive. Therefore, studying the factors affecting regional economic growth requires an analysis framework that incorporates the correlations mentioned above as much as possible. This paper uses a dynamic computable general equilibrium model based on the input-output data for 2017 and distinguishes fourteen sectors, and simulations are conducted for 2021 to 2025. The paper is organized as follows. Section 2 describes the Dynamic CGE model constructed and used for the analysis, including model structure, database, and benchmark scenarios. Section 3 presents the scenario designs and simulation results. Section 4 concludes.

2. Dynamic CGE model for Shanghai economy

2.1 CGE model for Shanghai Economy

CGE models designed to study development issues received considerable impetus from Dervis, de Melo, and Robinson (1982). This model was later extended to study regional economies within or based on other economies. Thus, Madden (1990) developed a dynamic regional CGE model with Tasmania and the rest of Australia as two regions of an economy.

Over time, regional CGE models have become a popular tool to study regional economies and related policy issues. We also developed a single region model of Shanghai to study the effect of the Yuan exchange rate, value-add tax reform, energy price, and Shanghai's economic relationships with the rest of China and the world (Sun, 2021). The model used in this paper further applies to the Shanghai economy.

Unlike national CGE models, regional CGE models have a more complex structure allowing for cross-region flows of products, factors, and funds. Depending on the model's construction and purpose, these cross-region flows can be endogenous, exogenous, or both. The Shanghai regional CGE model presented in this paper distinguishes 14 industries, one type of household, one type of labor, and one government type.

On the production side, all industries are assumed to operate under constant returns to the scale and observe the cost minimization rule. Production processes are supposed to follow CES (Constant Elasticity of Substitution) functions to combine labor and capital to produce the value-added. The intermediate input requirement is determined using Leontief type fixed coefficients applied to the gross output. The constant elasticity of transformation (CET) functions allow for substitution possibilities at two levels on the supply side. The CET specification enables substitution between exports and the domestically disposed part of the output at the initial level. The latter is disaggregated at the next level using the CET specification between the regional market within Shanghai and the regional market in ROC.

CES specifications conduct a similar two-level disaggregation with substitution possibilities on the demand side. At the first level, the CES specification aggregates the demand for Shanghai-produced output and ROC-produced output into a combined demand for domestically produced output. At the second level, the CES specification is used again to aggregate the demand for domestic output and the import demand, following the Armington assumption. As far as prices of exports and imports are concerned, Shanghai is assumed to be a small-economy, both ROC and ROW, making these prices exogenous to the Shanghai economy. Utility functions of the Cobb-Douglas type are used to model the consumption demand of households and governments. On the other hand, investment demand is determined by fixed coefficients determined based on the input-output table. The private sector's income is determined by factor income, with fewer taxes imposed on factor income (personal and property taxes). The government's revenue consists of indirect taxes, tariffs, personal income tax, enterprise income tax. Households and the government split up their income into consumption and savings. The savings of these two actors add up to form the total saving, which is spent on investment.

A well-specified model should satisfy Walras Law, according to which in an *n*-variable system, the equilibrium in *n*-1 markets should ensure the equilibrium in the *n*-th market. Several popular ways to check whether Walras Law is satisfied in a CGE model. The model in this paper uses for this purpose the aggregate savings-investment equation. Leaving out this equation also makes the price of savings as the *numeraire*.

The model is a dynamic recursive model. It is solved separately with updating equations connecting the model for one period with the one for the next period. The updating equations furnish the values (mainly through extrapolation) of the exogenous variables, such as the supply of labor, nominal wage of labor, real investment, capital stock, and the values of the parameters such as the total factor productivity of each industry. Extrapolation is based on specific growth rates and changes assumed for the pertinent variables and parameters. The total capital stock is obtained by adding investment to the previous period's capital stock and subtracting the depreciation. The predetermined capital stock is then allocated among industries according to the return rate to capital prevailing in them.

2.2 Dataset and Baseline of Shanghai Economy

The baseline information is summarized in the Social Accounting Matrix (SAM) (see table 1, Sun, 2021). The model parameters are calibrated based on the information contained in this SAM. It shows the balance between demand and supply in the output market, the balance between aggregate savings and investment, the budgetary balance of various actors, and the balance in the transactions with ROC and ROW. The SAM is based on Shanghai's input-output table of 2017 and other macroeconomic and sectoral information obtained from various other publications.

The first task in using the CGE model is to establish the baseline scenario (for 2017-2025) against which the scenarios can be compared.

The baseline needs to be reasonable, reflecting what would have happened if the recent trends by and large continued and parameter values did not change too much. For constructing such a baseline, it is assumed that during 2017-2025 labor, nominal wage, real investment, and TFP of each industry, respectively. These values accord well with recent experience. The scale parameter of exports in each sector is extrapolated based on exports' growth performance in the past. The exchange rate is fixed at the 2017 level, and the coefficients of intermediate inputs are assumed to remain the same as in the 2017 input-output table.

The baseline scenario (see table 2, Sun, 2021) presents the average growth rates of key macroeconomic variables and gross value added by industry during 2017-2025. As we can see, under the baseline scenario, Shanghai's real GDP is to grow at an annual average rate of 6.9 to 5.6 percent. The baseline scenario reflects the current trend of increasing Shanghai's dependence on ROW as a source of consumption and ROC as demand for her output.

3. The Model Simulations Scenarios and results

3.1 The Simulations Scenarios

Due to changes in the international and domestic economic environment and regional conditions, whether on the supply side or the demand side, there are many uncertainties in Shanghai's economic growth. The following four simulation scenarios are designed to analyze economic growth factors. The first is Scenario A, reflecting the sudden impact of the COVID-19 outbreak in the first quarter of 2020. The epidemic caused a large-scale stagnation of economic activity from the end of January to mid-April 2020, affecting all aspects of the supply and demand sides. The most obvious is the sudden decline in output and exports. Therefore, the output shrinkage scenario A of Shanghai's major industries in 2020 is designed (see below for details). The state formed by the epidemic's impact is used as the baseline scenario for subsequent simulations. Secondly, the simulation scenarios of the real estate industry's demand increasing 10% B1 and the investment of the real estate industry increasing 10% B2 are designed.

3.2 The Simulation Results

3.2.1 Scenario A: Impact of the COVID-19 pandemic in 2020 (new baseline for simulation analysis)

The sudden outbreak of COVID-19 at the end of January 2020 caused the suspension of large-scale economic activities nationwide and globally, and the Shanghai economy is no exception. According to data released by the Shanghai Municipal Bureau of Statistics, the economic growth in the first quarter of 2020 is -6.7%, of which the primary industry is -18.2%, the secondary sector is -18.1%, of which manufacturing is -18.5% and the tertiary industry is -18.5%. -2.7%. We assume that in 2020, except for January to April (about three months), when economic activities are stagnant due to the outbreak of COVID-19, the original baseline scenario's growth rate will remain unchanged at 6% in other periods. A rough estimate of the economic growth rate for 2020 will drop to 2.8%. The revised simulation scenario A is based on the 2020 outbreak and serves as the new benchmark scenario for subsequent analysis (the main indicators are shown in Appendix Table 1).

The simulation results of scenario A (pandemic shock) show that compared with the original baseline scenario without COVID-19, the annual GDP reduction during 2021-2025 will exceed 3% (from 3.11 to 3.35 percentage points). From the perspective of GDP expenditure, the main reason is that exports and transfers to ROC have reduced significantly. Even if imports and transfers from ROC have also decreased, the actual GDP is still reduced. From the perspective of industry value-added, only the value-added of the information software service industry that can work at home has increased, increasing by about 1.5% every year (2021-2025). The accommodation and catering industry saw the most significant decrease in added value, reducing 10.72 to 11.28 percentage points. The manufacturing industry, which accounts for more than a quarter (26%) of total GDP, also fell by 4.53 to 4.93 percentage points. The impact of the stagnation of production and consumption activities is significant. See appendix table 1(Scenario A) for changes in GDP expenditure items and added value of each industry.

3.2.2 The impact of the demand increase in the real estate industry

From the inside of Shanghai's economy, the simulation results of scenario B1 (the demand increases 10% of the real estate industry) show that compared with the baseline scenario after the outbreak, the impact of the increase of real estate demand on real GDP growth is negative. From 2021 to 2025, the increase in real estate demand will reduce Shanghai's real and nominal GDP and deflator. The degree of impact will increase year by year.

From the perspective of GDP expenditure, the increase in real estate demand will boost the growth of total rea; household consumption, government consumption, and investment consumption year on year. It has the most significant impact on household consumption, while it has little effect on government consumption expenditure.

From the relationship between Shanghai's economy and domestic and international markets, the increase of real estate demand on the import and export of Shanghai's global market is limited. In contrast, the transfer of Shanghai from the domestic market has a significant impact year by year. This phenomenon shows that Shanghai's real estate industry is highly dependent on the domestic market. The increase in demand will lead to a substantial increase in the transfer of the domestic market. This is also why the increase in demand for real estate in Shanghai will decrease Shanghai's GDP because the transfer is a negative GDP accounting item.

From the perspective of industrial added-value, increasing the demand for real estate negatively affects the added-value of all industries. That is to say, except for the real estate industry itself, the impact on the added value of all other sectors is negative. Among them, the most affected are the hotel and catering service industry, the residential services industry, and wholesale & retail. In contrast, the effect on the water, power & gas industry, the agriculture, construction industry, Finance & insurance, Leasing & business services, and public service is relatively low. Please refer to table 1 (Scenario B1, the main indicators are shown in Appendix Table 1) for specific GDP expenditure items and certain changes in the value-added of each industry.

3.2.3 The impact of the investment increase on the real estate industry

Unlike increasing consumer demand in the real estate industry, from the inside of Shanghai's economy, the simulation results of scenario B2 (the investment increase of 10% in the real estate industry) show that compared with the baseline scenario after the outbreak, the increase of real estate investment on real GDP growth has a significant negative impact. In contrast, the impact on nominal GDP is positive. The different performance of real GDP and nominal GDP is because the increase in investment leads to a rise in prices, which has a significant positive effect on the GDP deflator. From the perspective of GDP expenditure, the increase in real estate investment will boost the growth of total real household consumption, government consumption, and investment consumption year on year. It has the most significant impact on investment consumption, while it has little effect on government expenditure. At the same time, we can see that for the same increase, the effect of increased investment in real estate on GDP is far more significant than increasing the demand for real estate.

Like increasing consumer demand in the real estate industry, from the relationship between Shanghai's economy and domestic and international markets, the increase in real estate investment in the import and export of Shanghai's global market is limited. In contrast, the transfer of Shanghai from the domestic market has a significant impact year by year. It also explains that Shanghai's real estate industry is highly dependent on the domestic market. Like the increase in demand, an increase in investment will also lead to a substantial increase in the transfer of the domestic market. It will decrease Shanghai's real GDP because the transfer is a negative GDP accounting item. The difference is that the impact of increased investment is more significant than that of increased demand. And due to the different effects of price impact mechanisms, increased investment on nominal GDP is positive, and the impact of increased demand is negative.

Like increasing consumer demand in the real estate industry, from the perspective of industrial added-value, increasing the investment in real estate negatively affects the added-value of all sectors. That is to say, except for the real estate industry itself, the impact on the added-value of all other sectors is negative. Aside from differences in the magnitude of the effect, the industries most and least affected by increased investment and increased consumption are the same. Please refer to table 1 (Scenario B2, the main indicators are shown in Appendix Table 1)) for specific GDP expenditure items and certain changes in the value-added of each industry.

Table 1: The impact of the increase in demand and investment in the real estate industry (%)

	B1: Impact of Demand +10%					B2: Impact of Investment +10%				
	2021	2022	2023	2024	2025	2021	2022	2023	2024	2025
Real GDP	-0.03	-0.06	-0.11	-0.16	-0.24	-1.29	-2.71	-4.28	-6.03	-7.98
Nominal GDP	-0.23	-0.48	-0.76	-1.08	-1.44	0.27	0.54	0.79	1.03	1.25
GDP deflator	-0.20	-0.42	-0.66	-0.92	-1.21	1.58	3.34	5.30	7.51	10.03
Real household consumption	0.74	1.53	2.39	3.32	4.32	0.10	0.21	0.31	0.42	0.54
Real gov. consumption	0.00	0.00	0.01	0.02	0.03	0.00	0.01	0.04	0.07	0.13
Real investment	0.17	0.36	0.57	0.81	1.06	3.54	7.48	11.85	16.70	22.08
Real export to ROC	-0.04	-0.08	-0.12	-0.17	-0.21	-0.13	-0.26	-0.40	-0.53	-0.67
Real export to ROW	-0.03	-0.06	-0.09	-0.12	-0.15	-0.09	-0.19	-0.29	-0.38	-0.48
Real import from ROC	0.27	0.58	0.95	1.38	1.88	0.93	1.98	3.16	4.49	5.98
Real import from ROW	0.01	0.02	0.03	0.05	0.07	0.03	0.07	0.11	0.16	0.22
Agriculture	-0.01	-0.02	-0.02	-0.03	-0.02	-0.04	-0.07	-0.09	-0.11	-0.12
Manufacturing	-0.02	-0.04	-0.07	-0.09	-0.12	-0.08	-0.15	-0.23	-0.30	-0.38
Water, power & gas	0.00	-0.01	-0.01	-0.01	-0.01	-0.01	-0.02	-0.03	-0.04	-0.05
Construction	-0.01	-0.01	-0.02	-0.02	-0.03	-0.02	-0.04	-0.06	-0.08	-0.10
Wholesale & Retail	-0.06	-0.12	-0.19	-0.26	-0.33	-0.21	-0.42	-0.62	-0.82	-1.01
Transportation	-0.04	-0.09	-0.13	-0.18	-0.24	-0.15	-0.29	-0.44	-0.59	-0.75
Hotel and Catering	-0.15	-0.31	-0.48	-0.66	-0.86	-0.51	-1.01	-1.51	-2.00	-2.49
Information & software	-0.05	-0.09	-0.14	-0.20	-0.25	-0.16	-0.32	-0.48	-0.64	-0.80
Finance & insurance	-0.03	-0.06	-0.10	-0.13	-0.17	-0.10	-0.21	-0.32	-0.43	-0.54
Real estate	0.66	1.39	2.20	3.09	4.06	2.25	4.54	6.88	9.24	11.64
Leasing & business services	-0.03	-0.06	-0.09	-0.12	-0.16	-0.10	-0.20	-0.30	-0.40	-0.51
Residential services	-0.08	-0.17	-0.27	-0.37	-0.48	-0.29	-0.57	-0.86	-1.13	-1.41
Social services	-0.05	-0.10	-0.15	-0.20	-0.26	-0.16	-0.33	-0.49	-0.65	-0.81
Public service	-0.01	-0.02	-0.03	-0.03	-0.03	-0.05	-0.08	-0.09	-0.10	-0.08

4. Conclusions

The outbreak of Covid-19 in 2020 has led to the stagnation of economic activities in China and worldwide to a certain extent and has had a significant impact on Shanghai's economy. This study constructs a CGE model for the Shanghai economy to analyze the effects of the increased demand and investment in the real estate industry on Shanghai's economy from 2021 to 2025. Through the simulation analysis, the following conclusions are obtained.

The impact of the increase in real estate demand on real GDP, nominal GDP, and the GDP deflator is negative. The degree of influence will increase year by year. It has the most significant impact on household consumption, while it has little effect on government consumption expenditure. The impact on the import and export of Shanghai's international market is limited. At the same time, there has been a significant impact on the transfer of Shanghai from the domestic market because Shanghai's real estate industry is highly dependent on the domestic market. In terms of industrial added-value, increasing the demand for real estate negatively affects the added-value of all sectors.

The increase of real estate investment on real GDP growth has a significant negative impact, while the impact on nominal GDP is positive. The different performance of real and nominal GDP is because the increase in investment has a significant positive effect on the GDP deflator. And it also has the most significant impact on investment consumption. Additionally, we found, the effect of increased investment in real estate on GDP is far more important than raising the demand for real estate. The effect of the increase in real estate investment on the import and export of Shanghai's international market is limited. In contrast, the transfer of Shanghai from the domestic market has a significant impact. Like the increase in demand, an increase in investment will also lead to a substantial increase in the transfer of the domestic market and will lead to a decrease in Shanghai's real GDP. The difference is that the impact of increased investment is more significant than that of increased demand. And due to the different effects of price impact mechanisms, increased investment on nominal GDP is positive, and the impact of increased demand is negative.

Like increasing demand in the real estate industry, the effect of the increasing investment in the real estate industry, except for the real estate industry itself, on the added-value of all other sectors is negative.

In conclusion, the increase in real estate demand on real and nominal GDP is negative. In contrast, the increase of real estate investment on real GDP growth has a significant negative impact, and the impact on nominal GDP is positive. Also, the increase in real estate demand and investment positively impacts the transfer of Shanghai from the domestic market (ROC), and the latter has a more significant impact. Except for the real estate industry itself, increasing demand or investment in the real estate industry, the effect on the added-value of all other sectors is negative. In other words, it may be due to the crowding-out effect of investment or consumption, Shanghai's real estate demand or investment hurts the real GDP growth, and the hypothesis that "Real estate leads to economic growth" is not established in Shanghai during the observation period.

References

Dervis K., J. de Melo, and S. Robinson, The General Equilibrium Models for Development Policy, Cambridge: Cambridge University Press, 1982.

Gu Xiaoan, Li Huijie, Li Wenqing, Does Real Estate Investment Hinder Regional Economic Growth？--Based on the empirical evidence of China from 2000 to 2017, Science Technology and Industry No.9, 2021 (in Chinese).

Jing Gang & Wang Liguo, Research on the effect of Real Estate Investment in China's Economic Growth，Investment Research, No. 4, 2019 (in Chinese).

Lin Sun, A Scenario Analysis of the Growth Factors on the Supply Side and Demand Side of Shanghai's Economy in the Next Stage (2021-2025), International Journal of Business and Social Science Vol. 12, No. 3, 2021.

Madden, J. R., FEDERAL: A Two-Region Multisectoral Fiscal Model of the Australian Economy, Ph.D. Thesis, Hobart: University of Tasmania, 1990.

Xu Xianchun, Jia Hai, Li Jiao, et al., On the Role Played by Real Estate in the Growth of China's National Economy, Social Sciences in China, No.1, 2015 (in Chinese).

Yang Jibo & Kong Lingcheng, Empirical Study on Shanghai Real Estate Development and Investment Leading Economic Growth, East China Economic Management, No.07, 2013(in Chinese).

Zhao Yang, Zhang Yishan, Zhao Wensheng., Research on the Relationship between Real Estate Market, Residents' Consumption and Economic Growth, Economic Science, No.6, 2011 (in Chinese).

Zhou Xiaohan, Examination on the Dynamic Relationship of Real Estate Investment and Economic Growth in Shanghai, Journal of Guangxi University of Finance and Economics, No.5, 2014(in Chinese).

Appendix Table 1: New Baseline of Shanghai's Economy under the Impact of COVID-9 (100 million yuan)

	2017	2018	2019	2020	2021	2022	2023	2024	2025
Real GDP Growth rate	6.9%	6.7%	6.1%	2.8%	5.9%	5.9%	5.7%	5.62%	5.49%
Real GDP	30694	32737	34740	35704	37817	40038	42339	44719	47176
Nominal GDP	30694	33405	36279	39971	43655	47747	52278	57293	62837
GDP deflator	1.00	1.02	1.04	1.12	1.15	1.19	1.23	1.28	1.33
Real household consumption	12970	14107	15276	16828	18328	19986	21807	23808	26002
Real gove. consumption	4642	4926	5204	5427	5726	6037	6358	6692	7037
Real Investment	12193	12751	13313	13521	14088	14669	15264	15873	16494
Real export to ROC	49270	52359	55325	55927	59049	62332	65755	69318	73024
Real export to ROW	13493	14110	14457	14177	14526	14869	15207	15540	15867
Real import from ROC	35812	37889	40015	40833	43097	45508	48071	50799	53703
Real import from ROW	26063	27627	28820	29344	30801	32346	33981	35711	37545
Agriculture	115	116	116	111	111	111	110	110	109
Manufacturing	7977	8306	8506	8326	8522	8714	8903	9089	9272
Water, power & gas	416	442	464	486	510	535	560	586	612
Construction	971	1011	1050	1025	1061	1096	1131	1167	1202
Wholesale & Retail	4393	4676	5023	5045	5395	5760	6139	6532	6939
Transportation	1345	1448	1596	1644	1804	1976	2160	2356	2565
Hotel and Catering	412	482	517	494	526	559	592	624	656
Information & Software	1862	2045	2235	2472	2699	2951	3222	3513	3825
Finance & Insurance	5331	5808	6303	6820	7401	8044	8735	9476	10269
Real estate	1873	1985	2099	2147	2259	2375	2494	2617	2743
Leasing &Business services	1788	1923	2061	2133	2280	2435	2597	2766	2940
Residential services	347	367	387	392	410	428	445	461	477
Social services	3151	3409	3663	3803	4058	4318	4582	4849	5118
Public service	713	749	785	806	840	875	909	943	977

Appendix Table 2: The Impact of Real Estate Demand +10% (100 million yuan)

	2017	2018	2019	2020	2021	2022	2023	2024	2025
Real GDP Growth rate	6.90%	6.64%	6.12%	2.67%	6.05%	6.01%	5.89%	5.76%	5.64%
Real GDP	30694	32733	34737	35665	37823	40096	42457	44905	47436
Nominal GDP	30694	33416	36306	40121	43737	47737	52146	56999	62334
GDP deflator	1.00	1.02	1.05	1.12	1.16	1.19	1.23	1.27	1.31
Real household consumption	12970	14109	15281	16856	18500	20343	22398	24690	27247
Real gove. consumption	4642	4926	5202	5419	5719	6031	6356	6693	7043
Real Investment	12193	12803	13443	14115	14821	15562	16340	17157	18015
Real export to ROC	49270	52355	55325	55896	59079	62437	65950	69624	73464
Real export to ROW	13493	14107	14452	14149	14507	14863	15216	15566	15915
Real import from ROC	35812	37927	40113	41282	43796	46516	49459	52651	56122
Real import from ROW	26063	27639	28853	29489	31007	32624	34344	36175	38126
Agriculture	115	116	116	111	111	111	110	110	109
Manufacturing	7977	8304	8503	8310	8511	8711	8909	9105	9301
Water, power & gas	416	442	464	486	511	537	564	592	620
Construction	971	1014	1058	1060	1104	1148	1194	1241	1289
Wholesale & Retail	4393	4675	5020	5030	5386	5757	6144	6547	6967
Transportation	1345	1448	1595	1640	1800	1973	2157	2355	2565
Hotel and Catering	412	482	517	492	523	555	587	618	649
Information & Software	1862	2045	2236	2475	2707	2965	3243	3542	3864
Finance & Insurance	5331	5807	6303	6815	7411	8075	8790	9562	10394
Real estate	1873	1987	2104	2168	2306	2452	2608	2775	2952
Leasing &Business services	1788	1922	2061	2129	2279	2437	2603	2775	2955
Residential services	347	367	386	391	409	426	443	460	475
Social services	3151	3409	3663	3799	4056	4318	4585	4855	5128
Public service	713	749	785	805	839	874	909	944	978

Appendix Table 3: The Impact of Real Estate Industry Investment +10% (100 million yuan)

	2017	2018	2019	2020	2021	2022	2023	2024	2025
Real GDP Growth rate	6.90%	6.64%	6.12%	2.67%	4.71%	4.52%	4.22%	3.89%	3.52%
Real GDP	30694	32733	34737	35665	37346	39034	40683	42267	43754
Nominal GDP	30694	33416	36306	40121	43956	48224	52962	58215	64036
GDP deflator	1.00	1.02	1.05	1.12	1.18	1.24	1.30	1.38	1.46
Real household consumption	12970	14109	15281	16856	18384	20077	21943	23998	26261
Real gove. consumption	4642	4926	5202	5419	5719	6032	6358	6697	7049
Real Investment	12193	12803	13443	14115	14821	15562	16340	17157	18015
Real export to ROC	49270	52355	55325	55896	59024	62321	65768	69369	73130
Real export to ROW	13493	14107	14452	14149	14497	14843	15185	15525	15861
Real import from ROC	35812	37927	40113	41282	44086	47162	50541	54265	58379
Real import from ROW	26063	27639	28853	29489	31013	32639	34370	36215	38184
Agriculture	115	116	116	111	111	111	110	110	109
Manufacturing	7977	8304	8503	8310	8507	8701	8894	9086	9276
Water, power & gas	416	442	464	486	511	537	564	591	620
Construction	971	1014	1058	1060	1104	1148	1194	1240	1288
Wholesale & Retail	4393	4675	5020	5030	5378	5740	6118	6510	6919
Transportation	1345	1448	1595	1640	1798	1969	2151	2345	2552
Hotel and Catering	412	482	517	492	521	551	581	610	639
Information & Software	1862	2045	2236	2475	2704	2958	3232	3526	3843
Finance & Insurance	5331	5807	6303	6815	7406	8063	8771	9534	10356
Real estate	1873	1987	2104	2168	2342	2529	2728	2940	3167
Leasing &Business services	1788	1922	2061	2129	2277	2434	2597	2768	2945
Residential services	347	367	386	391	408	424	440	456	471
Social services	3151	3409	3663	3799	4051	4308	4569	4833	5099
Public service	713	749	785	805	839	873	908	943	978