

Correlations

Between

China

**Residential and Office
Real Estate Markets**

In

**Beijing, Shanghai,
Guangzhou, and
Shenzhen**

***Zeppelin* Real Estate Analysis Limited**

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A) Introduction

This is a simple correlation study on the 4 major real estate markets in Mainland China, namely Beijing, Shanghai, Guangzhou, and Shenzhen in terms of their residential and office sectors. The residential and office sectors referred to herein are mostly focused on the luxury / better quality residences and Grade-A offices.

This study utilizes the published real estate rent and price indexes of such sectors and correlations are calculated between the 4 combinations of residential-rent, residential-price, office-rent, and office-price within any one of the cities indicated. Likewise, correlations are also calculated between the cities themselves. The data starts from 1991 and 4th quarter figures are generally used except for 2003 where 3rd quarter figures are adopted as being the latest available for the year.

This study may be of use and interest to real estate developers, investors, investment funds, investment trusts, banks, financiers, multinational corporations, real estate owners and occupiers, executives, professionals, academics, and students interested in these markets.

This study may help such interested parties in further investigating and researching possible diversification, allocation, and / or risk management options if any.

This study is meant for brief and rough reference only and has been based on published data and information such as professional market reports by major real estate consultancies, newspapers, journals, government statistics, and the like, deemed applicable and sources deemed reliable, however no verification of their applicability and accuracy has been performed. Zeppelin and / or its executives, staff, associates, consultants, and the like do not take any responsibility for errors or omissions contained herein or for damages or losses arising out of the reference to the content contained herein. Prospective readers and investors are recommended to pursue further detailed study and / or seek proper professional consultation prior to making decisions or investments.

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B) Summary

Based the study contained herein, and subject to further detail study and analysis, and consideration of other factors, general or specific:

1) Some cities correlate a bit more overall than they do with others. The same

applies to real estate sectors. It may not be entirely prudent to view China real estate markets as being one or uniform.

- 2) Given the correlations, and from a risk reduction angle, perhaps allocation over a suitable combination of cities and / or real estate sectors may offer less risks than concentrating on a single city and real estate sector, assuming risk reduction being a consideration.

C) Correlation Observations

1) Overall

Only the office-rent combination among the 4 major cities seems to hold some correlation across markets. Both the office-price and residential-rent combinations show mixed results, i.e. between some cities they do exhibit some correlations while between other cities they do not. The residential-price combination seems to hold the least correlations (except in one case) across markets.

The correlation descriptions to follow have adopted the following format throughout:

		Base / Other City:	Office Rent	Price	Resident Rent	Price
Base City:	Office	Rent	Correlation	Correlation	Correlation	Correlation
		Price	Correlation	Correlation	Correlation	Correlation
Resident		Rent	Correlation	Correlation	Correlation	Correlation
		Price	Correlation	Correlation	Correlation	Correlation

2) Beijing with Shanghai, Guangzhou, and Shenzhen

Within Beijing itself, some correlations exist between office and residential rents, and between office and residential prices, but not between residential rent and price, or between office rent and price.

		<u>Beijing</u>	Office Rent	Price	Resident Rent	Price
<u>Beijing</u>	Office	Rent	-	-	-	-
		Price	0.3660	-	-	-
Resident		Rent	0.7631	0.2948	-	-
		Price	0.1986	0.8795	0.1631	-

With Shanghai, some correlations exist between the two cities' office-rent, office-price, and residential-rent combinations, but none in the residential-price combination. Interestingly, some correlations may exist

between one city's combination and the other city's different combination. For instance, Beijing's office-rent seems to correlate with Shanghai's residential-rent and residential-price.

		<u>Shanghai</u>			
		Office		Resident	
<u>Beijing</u>		Rent	Price	Rent	Price
Office	Rent	0.7348	0.1327	0.6150	0.6581
	Price	0.0378	0.6642	0.0161	0.5765
Resident	Rent	0.6361	0.0179	0.7095	0.7006
	Price	0.0000	0.6352	0.0006	0.4014

With Guangzhou, some correlations exist between the two cities' office-rent and office-price, but none so in the other combinations. As with Shanghai, some correlations may exist between one city's combination and the other city's different combination. For instance, Beijing's residential-rent seems to correlate with Guangzhou's office-rent, office-price, and residential-price.

		<u>Guangzhou</u>			
		Office		Resident	
<u>Beijing</u>		Rent	Price	Rent	Price
Office	Rent	0.7994	0.5907	0.1117	0.4022
	Price	0.2023	0.5552	0.1615	0.1729
Resident	Rent	0.8077	0.6718	0.2552	0.7316
	Price	0.1075	0.4227	0.2652	0.0912

With Shenzhen, interestingly the situation is quite similar to the situation with Guangzhou.

		<u>Shenzhen</u>			
		Office		Resident	
<u>Beijing</u>		Rent	Price	Rent	Price
Office	Rent	0.6196	0.7132	0.0797	0.4557
	Price	0.0141	0.5112	0.2851	0.0310
Resident	Rent	0.6261	0.4924	0.1396	0.7694
	Price	0.0078	0.3026	0.4082	0.0039

3) Shanghai with Guangzhou and Shenzhen

Within Shanghai itself, only office-rent and residential-rent demonstrate some correlation.

		<u>Shanghai</u>			
		Office		Resident	
<u>Shanghai</u>		Rent	Price	Rent	Price
Office	Rent	-	-	-	-
	Price	0.0001	-	-	-
Resident	Rent	0.8864	0.0161	-	-
	Price	0.4563	0.3117	0.4446	-

With Guangzhou, some correlations exist between the two cities' office-rent and residential-rent combinations. Interestingly, some correlations may exist between one city's combination and the other city's different combination. For instance, Shanghai's residential-rent and residential-price correlate with Guangzhou's office-rent.

		<u>Guangzhou</u>	Office	Resident		
<u>Shanghai</u>			Rent	Price	Rent	Price
Office	Rent		0.7719	0.2709	0.4508	0.3108
	Price		0.0321	0.2171	0.4291	0.0000
Resident	Rent		0.7372	0.3349	0.5509	0.5111
	Price		0.6224	0.7047	0.0167	0.4550

With Shenzhen, the situation is quite similar to the situation with Guangzhou.

		<u>Shenzhen</u>	Office	Resident		
<u>Shanghai</u>			Rent	Price	Rent	Price
Office	Rent		0.9544	0.4485	0.4344	0.5970
	Price		0.0053	0.4274	0.4994	0.0399
Resident	Rent		0.9084	0.3664	0.5252	0.8531
	Price		0.4281	0.7805	0.0000	0.4187

4) Guangzhou with Shenzhen

Within Guangzhou itself, only office-price and residential-price exhibit some correlation.

		<u>Guangzhou</u>	Office	Resident		
<u>Guangzhou</u>			Rent	Price	Rent	Price
Office	Rent		-	-	-	-
	Price		0.4876	-	-	-
Resident	Rent		0.2817	0.0061	-	-
	Price		0.4090	0.7386	0.1917	-

With Shenzhen, correlations exist in all four combinations of office-rent, office-price, residential-rent, and residential-price. Some correlation also exist between Guangzhou's residential-rent and Shenzhen's office-rent, and between Guangzhou's office-rent and Shenzhen's residential-price.

		<u>Shenzhen</u>	Office	Resident		
<u>Guangzhou</u>			Rent	Price	Rent	Price
Office	Rent		0.6698	0.4661	0.2031	0.5965
	Price		0.2657	0.7199	0.0038	0.4717
Resident	Rent		0.5430	0.0000	0.8942	0.4836
	Price		0.3771	0.3562	0.0876	0.8078

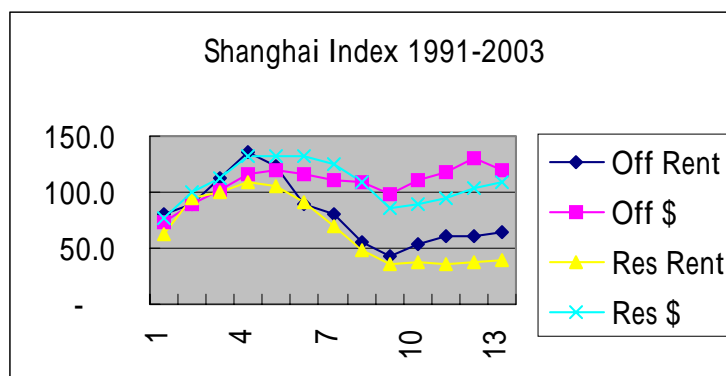
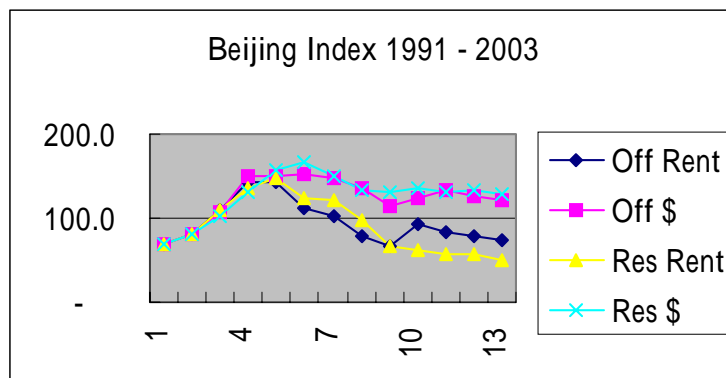
5) Shenzhen

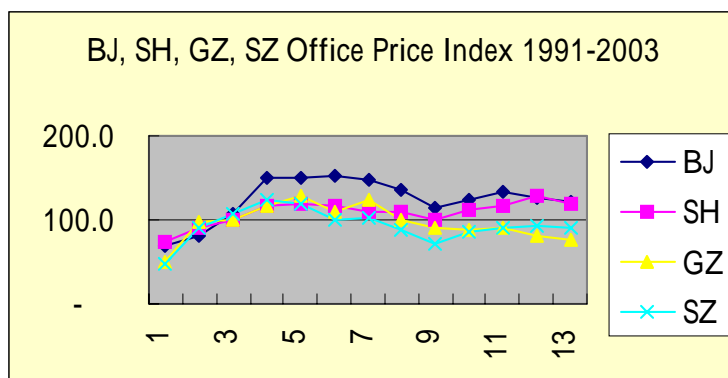
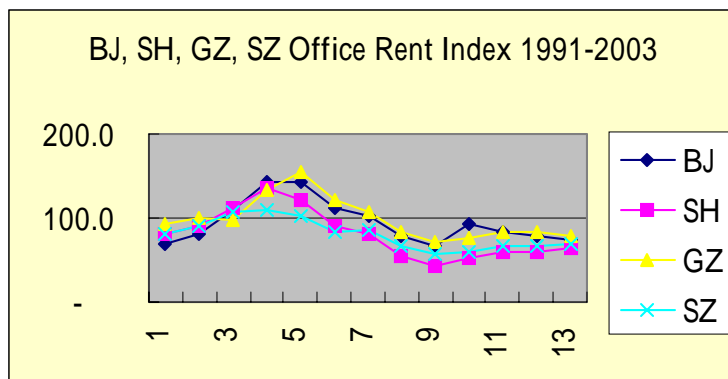
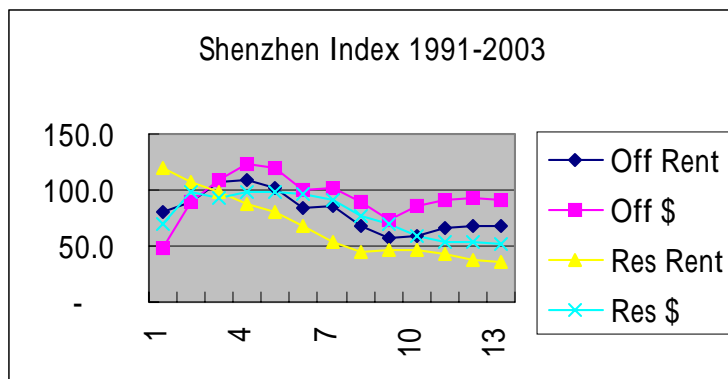
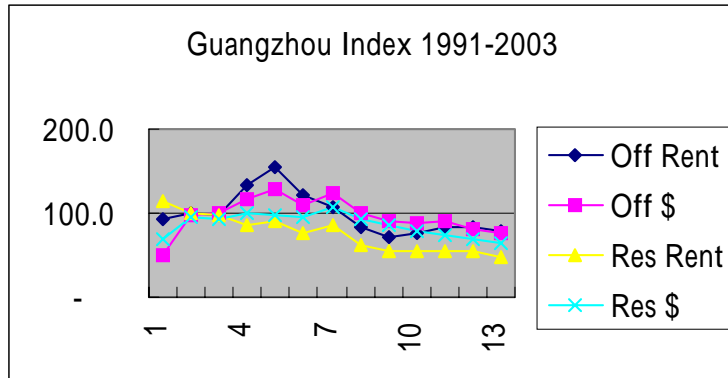
Within Shenzhen itself, only office-rent has some correlation to residential-price.

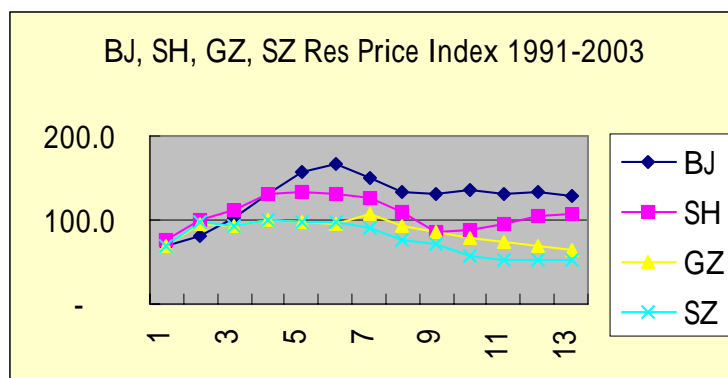
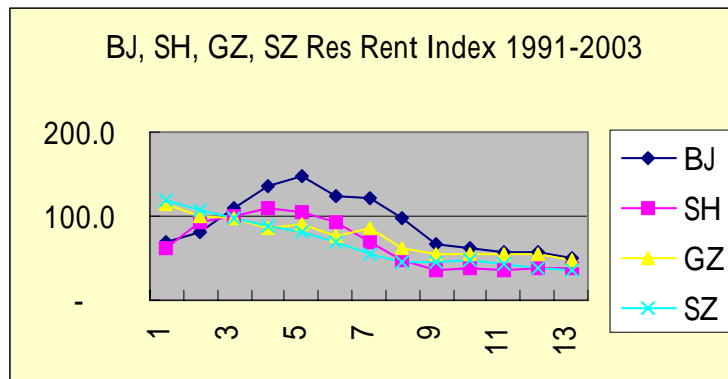
		<u>Shenzhen</u>		Office		Resident	
<u>Shenzhen</u>		Rent	Price	Rent	Price	Rent	Price
Office	Rent	-	-	-	-	-	-
	Price	0.4111	-	-	-	-	-
Resident	Rent	0.4888	0.0029	-	-	-	-
	Price	0.6655	0.2767	0.3903	-	-	-

D) Real Estate Index Charts

The following charts are provided for basic reference and are listed in 2 groups of 4 charts each: 1) City Based group, namely Beijing, Shanghai, Guangzhou, and Shenzhen, and 2) Real Estate Sector Index based group, namely office-rent index, office-price index, residential-rent index, and residential-price index.







E) Notes

In this study, a correlation value of 0.50 or higher is considered to imply some correlation, though admittedly this may be an arbitrary on our part. Prospective readers and investors are advised to exercise their own judgment.

The fact that two items show some correlation does not automatically follow or imply that there is a 'cause and effect' or 'factor and result' relationship between them, as this may happen purely by chance. Also, even if there is apparent evidence of significance or relationship between them, such significance or relationship may change as circumstances change. In short, there is always a chance that what was observed or had happened may not be observable or repeated in future.

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