

Research on Property and Market Rating in China Based on Basel II

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SUMMARY

Rating is a new discipline in the property industry. In developed countries, as an indispensable part of real estate appraisal, property rating analysis is a long-established procedure for assessing financial standing of the targeted property. Property and market rating is set to become. The internationalization of real estate markets has significantly increased complexity due to the different framework conditions and practices on individual markets, resulting in new regulatory requirements such as IAS and Basel II. The correct implementation of these rules requires systematic instruments that enable a comparison of properties by means of rating.

There is not any normal property and market rating system or professional rating agencies in China, and most objectives of the rating studies are credit or business. With regard to properties, the main focuses are the investment risk analysis and economic evaluation in the stage of feasibility study. With the gradual integration into the world economy, especially the mutual infiltration of the capital markets, relatively uniform standards of property and market rating need to be constructed in China, so as to facilitate comparative analysis.

The aim of this study is to provide an effective micro-level property and market rating system in China from the perspective of real estate market analysis, basing on the requirements of credit rating in Basel II, using foreign experience for reference as well. The article subdivides the properties into four classifications: residential properties, commercial properties, office buildings and production properties, and then develops the rating indicators for residential properties. However, there are four basic rating standards that are market conditions, location factors, physical characteristics and profitability. As a pioneering research, we are unable to use the existing data to establish qualitative rating model, therefore adopting Delphi Model to determine the weighting of each indicator. In the final part of this paper, a representative case is chosen to stimulate the property and market rating by the constructed system, at the same time verifying the result in comparison with the market position and development future. The conclusions are that the property and market rating system of this paper is quite applicable in China.

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1. INTRODUCTION

1.1 Research Background

There can be little doubt that rating is still a new discipline in the property industry. For companies, banks and investment institutions, rating analysis is a long-established procedure for assessing financial standing of projects. In developed countries, as an indispensable part of real estate appraisal, property and market rating isn't focused on the ability to meet financial obligations but on the comparability of opportunity and risk profiles. On June 26th 2004, the "game rules" of international bank industry, New Basel Capital Accord (Basel II) reached a final version, which prescribes two methods of credit rating: Standardised Approach and Internal Ratings Based Approach, providing a more workable international standards for property and market rating.

Along with the gradual integration into the world economy, especially the mutual infiltration of the capital markets, relatively uniform standards of property and market rating need to be constructed in China, so as to facilitate comparative analysis. There is not any normal property and market rating system or professional rating agencies in China. Developers lay particular emphasis on profitability and balance analysis of financing in the investment stage, while financial institutions mainly investigate the repayment potential of debt when evaluating the real estate development loans. The information system and forecasting systems of property markets aim at monitor the supply, demand, costs and vacancy rates etc., in order to enhance the macro regulation of the country, but can't meet the needs of micro parts in the markets. The classification and rating of urban land is mass assessing of the land, excluding buildings, serving intentions as land use planning, appraisal and tax collection. Most objectives of current rating studies are credit or business. With regard to properties, the main focuses are the investment risk analysis and economic evaluation in the stage of feasibility study.

1.2 Research Significance

Against a background of increasing concerns with regard to credit operations and capital return, clear opportunity and risk profiles of properties and their relevant markets are of high importance as a key element of property valuation and profitability analysis. General comments on markets, locations and competitors no longer suffice to meet the various demands of transparency in the finance and real estate industry. In light of the required transparency, a system which covers and in the meantime evaluates both the property and its market with all technical and economic features is of utmost significance. The basic requirement, which is made by many actors in the real estate sector, was decisive for developing a new and appropriate rating system. This is because that, on the one hand, the internationalism of real estate markets has significantly increased complexity due to the

different framework conditions and practices on individual markets, thereby making comparisons more difficult. On the other hand, increasing cross-border transactions have resulted in new regulatory requirements as evidenced by IAS accounting or Basel II. The correct implementation of these rules desires systematic rating instruments that enhance market transparency and provide reference for real estate market participants and those of relevant interests.

For China with high-speed development of economy, World Bank has pointed out in its evaluation report that according to the experience of the economy development in other countries, the profitability of financial crisis in the coming 20 years is close to 100%. Particularly in the last few years, the realty industry has undergone an explosion growth, and the price has been souring. Not only real estate developers incur enormous debt for hoarding land and building improvements, but also consumers purchase houses on loan thinking little of the cost due to the rising trend of price. Banks don't hesitate to provide loans from the considerations of pursuing interests, resulting in the large proportion of real estate development loans and mortgage loans in the balance sheet. In the meantime, the turbulence of global finance markets arisen by the crisis of sub mortgage loans in America which began in April, 2007 and hasn't passed as yet has knolled the alarm bell for real estate loans in China. There lies profound causation and inevitability behind the crisis of sub mortgage loans in America, among which the weak risk consciousness and disabled market restriction mechanism are the final hidden trouble, and also the imperfection of the property and market rating system became one of the reasons. Currently, the mortgage loans in China are mainly of high quality, not to mention "zero principal", however, the default rates generally begin to rise in 3-5years after the granting of loans. Most of the residential mortgage loans is new in the last 2 years, which means that the default rate may ascend gradually with the process of time. For the sake of preventing occurrence of credit crisis similar to that in America, property and market rating system needs to be established in China, so that financial institutions and investors can hold the market pulse more clearly and improve their own capability of risk management.

The aim of this study is to provide an effective micro-level property and market rating system in China for real estate professionals and financial institutions from the perspective of real estate market analysis, basing on the requirements of credit rating in Basel II, using foreign experience for reference as well. In the final part of this paper, a representative case is chosen to stimulate the property and market rating by the constructed system, at the same time verifying the result in comparison with the market position and development future.

2. STUDY ON RELATIVE THEORIES OF PROPERTY AND MARKET RATING

2.1 Rating Provisions in Basel II

2.1.1 Overview of Basel II

In June, 2004, after a 5-years period of rough international negotiation, opinion inquiry and repeating calculation and amendment, New Basel Capital Accord (Basel II) came on in due

form. As an international agreement concerning capital measurement and supervision of banks, New Basel Capital Accord represents the development trend of risk management in commercial banks. The principle of overall risk management featured by quantitative analysis and balance supervision oriented to risk management spark plugged and embodied in Basel II is of practical guidance to global bank industry even international financial domain.

The New Accord consists of three pillars: (1) minimum capital requirements, (2) supervisory review of capital adequacy, and (3) public disclosure. With regard to credit risk, the New Record provides two kinds of calculation methods: Standardized Approach (SA) and Internal Ratings Based Approach (IRB). The IRB approach is divided into Foundation IRB Approach and Advanced IRB Approach further. The IRB approach offers reference for commercial banks all over the world to innovate and improve credit risk identification system and credit management, provided with important significance to the accuracy and sensibility of risk measurement.

After its release, Basel II has got active response from the international financial domain. The attitude towards enforcing and implementing the New Accord is quite definite: China Banking Regulatory Commission□CBRC□ has drawn up the strategy of “development along two measures” and “double-track system” in carrying out Basel II, and requires large commercial banks to speed the construction of internal rating system, satisfy the request of the New Accord, and improve the capacity of risk management.

2.1.2 Property Rating Standards in Basel II

Among the 5 classes of assets under the IRB approach, income-producing real estate (IPRE) and high-volatility commercial real estate are included into corporate asset class. For income-producing real estate, the prospects for repayment and recovery on the exposure depend primarily on the cash flows generated by the asset. The primary source of these cash flows would generally be lease or rental payments or the sale of the asset. The borrower may be, but is not required to be, an SPE, an operating company focused on real estate construction or holdings, or an operating company with sources of revenue other than real estate. The distinguishing characteristic of IPRE versus other corporate exposures that are collateralized by real estate is the strong positive correlation between the prospects for repayment of the exposure and the prospects for recovery in the event of default, with both depending primarily on the cash flows generated by a property. High-volatility commercial real estate (HVCRE) lending is the financing of commercial real estate that exhibits higher loss rate volatility.

Appendix 4 of New Basel Capital Accord lists the risk rating standards for income-producing real estate and high-volatility commercial real estate by the supervisor in detail.

2.2 Theory of Property and Market Rating

2.2.1 Fields of application

2.2.1.1 Loan analysis in the process of granting property loans

In the context of property financing, market value appraisals or mortgage lending valuations are an essential element of the loan decision. They are used to determine adequate interest conditions in line with the entailed risk, the concomitant lending limit and the refinancing costs. Property and market rating makes medium-term property and market risks & opportunities transparent for the decision makers. The markets themselves, but also the properties in their relevant markets, become more comparable with each other. Although this does not allow one to depict the absolute risk or opportunity, it shows the relative position of an asset in comparison with similar properties.

2.2.1.2 Risk analysis of portfolios for securitization purposes

Mortgage securitization means that certain groups of credit claims are transferred to a legal entity known as a Special Purpose Vehicle (SPV) that has been created especially for this purpose. It refinances itself by issuing securities (Asset Backed Securities, ABS) that are sold to institutional investors. A special form of ABS is Mortgage Backed Securities (MBS). If such a pool consists of private loans, they are called Residential MBS (RMBS); and if it consists of commercial loans, they are called Commercial MBS (CMBS). The securitization transaction basically means that risks are transferred and less regulatory capital is necessary. In order to place MBS in a market, the transaction should first be rated by a rating agency that mainly focuses on the quality of securities.

2.2.1.3 Investment and disinvestment decisions

Supported by the rating process, it is possible to generate a second essential string of information in addition to property valuation. While the determination of the market value ascertains the possibly achievable price for a property on the valuation date, rating offers information about the future development of a property as compared to similar assets. This statement helps a property owner to make a decision with regard to the possible sale of his or her property. If sufficient information is available, a potential purchaser receives the same assistance. Such help may be useful both for individual properties as well as for portfolios because portfolio management is a risk-oriented diversification of a property pool.

2.2.1.4 Portfolio analysis and control

In the context of portfolio management, property and market rating serves to identify a strategy relating to investment diversification. Furthermore, it is an efficient means of discovering risks that have arisen because of the specific structure of a portfolio. It is obvious that risk management is only able to support a business strategy adequately if it contributes to rapidly identifying problems in the portfolio composition in terms of region, material and time. Therefore, it is first of all necessary to recognize the individual property and market

risks and how they interact. In a second step, these findings may then be applied to the property portfolio or property loan portfolio. The portfolio can be transformed into a market risk-weighted portfolio map that shows the regional portfolio distribution using a geographical information system (GIS). If the market conditions change, the rating for the affected properties may be modified correspondingly and will reflect the changed risk profile. In this context, it is the objective of property and market rating to create an evaluable database and the instrument that is necessary to develop risk profiles for accessing a portfolio.

2.2.2 Definitions of property and market rating

Property and market rating is a standardized procedure aiming to display the sustainable quality of a property in its relevant market. The quality of a property is judged by the medium-term sales prospects at a then adequate price between professionals who have access to all property and market information. The credit standing of the tenant and the borrower, as well as the default risk of the loan, are not subjects of the property and market rating.

The interval of property and market rating is generally 3-5 years. Latent factors in the future medium-term should be considered, and compared with competitive real estate in relevant markets. The anticipate affairs close to the rating date is more certain, thus have more impact on the rating results.

3. DESIGN OF PROPERTY AND MARKET RATING INDICATOR SYSTEM

3.1 Principles of Designing Indicator System

3.1.1 Integrality

Theoretically, the indicator system should reflect the whole performance and synthesis condition of the rating subject accurately. The contents of evaluation should include various factors influencing the market conditions of the rating subject, not only investigating past characteristics, but also predicting future development trend; not only considering the subject itself, but also studying the neighborhood and its impact. The indicator system can reflect direct and indirect effects, combining dynamic and static indicator together, thereby ensuring comprehensiveness and credibility of the evaluation.

3.1.2 Rationality

Property and market rating system should be scientific and logical, with its indicators organically conjugating to form a system. The economic content covered by each indicator is not intersectional, working in coordination in explaining function. The selection of qualitative indicator and establishment of benchmark value need a lot of historical data analysis. Some qualitative indicators should be quantized to the utmost extent, so as not to rate randomly. Moreover, the contents of evaluation should have scientific description, and the intention of each indicator should be clear.

3.1.3 Consistency

The rating system is uniform and coherent breadthwise and lengthways to ensure the comparability between rating subjects of the same category.

3.1.4 Representativeness

The elements involved in property and market rating are diverse, associating and intercrossing mutually, which have comprehensive extension and misty intention. As a holistic and logical indicator system, representative factors should be screened out from numerous indicators available, to make it reflect the diversification of rating system but not too complicated.

3.1.5 Maneuverability

The indicator system should show practicability and definitude meanings, convenient for manipulation. The setup of indicator system should be in line with current accounting indicators, statistical indicators, operation calculation indicators and so on, to make it possible for acquiring the data required by the rating. Each indicator and its computation method should be standardized and normalized. For those soft indicators which are difficult to collect, they are to be harden combining questionnaire, on-the-spot investigation and expert counsel to the best, in order to calculate and contrast.

3.2 Basic Frame of the Indicator System

Property and market rating system is so complicated that it needs to be divided into several groups according to the nature of factors, for the sake of mapping and adding effectively. In this system, the domination from stem to stem forms step-up hierarchy: the uppermost level is the objective, while the undermost is the level of indicators, and the level between them is criteria level.

The ultimate objective of property and market rating is the probability of achieving long-term stable economic benefit. The long-term stable economic benefit itself is a synthesis concept, composed of many sub-objectives. The property and market rating should obtain favorable effects in dimensions of both time and space, which at least reflects current and long-term sub-objectives of the property and its context as well. Physical characteristics and profitability reflect the property itself at present; locations factor represent the environmental impacts; and market conditions show the potentials and risks of the project, embodying the long-term performance and development extent.

The criteria classes are the channel which lies between the object and indicator level. The results of various projects are reflected in the objective through attribute values of the factors, educing synthesis rating ultimately. Each criterion can be divided into several sub-criteria further. The correlation and subjection of the factors is the core content in the indicator frame. The indicator levels are the bottommost of the structure, bearing the characteristics of measuring directly.

3.3 Property Classes in the Rating System

For the property and market rating, properties may be roughly subdivided into the following groups according to their use: residential properties, commercial properties, office buildings and production properties. To allocate a property to the appropriate class, its main use must be established. The basis for determining the main use of a given property is the proportion of the gross return generated by the individual type of use. The respective net rents that can be achieved in a sustainable way may be used in order to determine these shares. The gross return share of the main use should not be less than two thirds of the overall gross return. The basic idea underlying this kind of procedure is the following: A potential purchaser or investor usually assesses such a property, its opportunities and risks on the types of use that generate the highest return from the asset. The proportion of the space available for the different kinds of use in the building are of secondary importance compared to the return. For these mixed properties, where different types of use exist and none is dominant, rating is carried out in proportion to the individual gross return share that the corresponding use generates in the asset.

3.4 Impact Factors in Property and Market Rating

3.4.1 Market conditions

Market conditions refer to the macroscopic ingredients including natural factor, regional economic development degree, urban planning, city attractiveness and investment potential, socio-demographic development, policy and direction in property industry, supply and demand of subdivided markets, etc. The property and market rating system established in this paper applies to the situation of China, different from the uniform one of Europe, consequently market conditions exclude the national markets, but focuses on regional markets. On account of the macro socio-economic factor, market conditions in the same city is generally identical; as for distinct property classes, the basic indicators involved in this item are not too differential.

3.4.1.1 Natural factors

The relevance of this indicator for the rating of properties is obvious: It is possible that the environmental influences become directly relevant in terms of the owner's costs for a property in times of natural disasters, for instance, flood, typhoon and earthquake. Furthermore, it is possible that these environmental influences characterize the image of a region so strongly that this results in general price increases or reductions for properties in the corresponding area. This criterion comprises natural disaster and environmental pollution.

3.4.1.2 Macro economic factors

The evolution condition is closely related to the development level of macro economy, with the overall steadiness of regional economy, development future and economic environment as important factors to draw on foreign investment. Economic stability and development future are mainly measured by the growth rate of GDP, and act on all property sub-markets through

influencing some the income of inhabitants, employment, psychology anticipation, consumables, capital demand and other aspects.

3.4.1.3 Socio-demographic factors

Socio-demographic development is displayed by way of indicators about population development, purchasing power and employment condition, namely the population growth rate, disposable income per capita and unemployment rate. With all other factors remaining the same, inhabitation and working aspiration is stronger in quarters with good economic condition, generally making the house price higher.

3.4.1.4 Policy conditions

In the analysis of property markets, policy, legal and taxation conditions are all-important factors. These conditions construct the institutional background in certain regions substantially. Due to the identical elementary policy about real estate nationwide and the uniform financial variables such as interest prescribed by the central bank, we just consider the specific regulations in individual area, such as regional development policy, land policy and tax exemptions, with the key indicators including taxation policy, land granting, adjustment of urban function arrangement and limits on real estate transference

3.4.1.5 Market segment

Finally, in order to evaluate the property markets, not only do their driving forces and general conditions have to be identified and analyzed, but also the markets themselves. This estimate is made by way of indicators in relation to rent and price development and the market tension (vacancy rate).

3.4.2 Location Factors

The location rating describes the qualification in relation to the medium-term sales prospects of the property in its relevant market, so the location criteria are determined per property class respectively. It is sensible to first divide the locations into macro and micro ones. The macro location of a property marks the larger area in which the plot of land is located, while the micro location means the immediate environs of it, with characteristics such as transportation facilities, local supplies and the structure of surrounding properties.

To identify whether a location criterion is an advantage or a disadvantage, the requirements have to be defined for the respective property type. For example, location near a motorway is valued negatively for the residential properties because of the noise pollution, but for office buildings, it will be valued neutrally, for the reason that despite of the exposure to noise, it reduces the mutual cost of people working there. The same situation can be valued very positively for warehousing and production properties, since the high connection to external roads facilitates the conveyance of products and materials. Another example is that undeveloped service and education facilities are very adverse to the residential properties, but

not an important factor for the location of office buildings and production properties. In regard to commercial properties, the principal location factor is the prosperity extent, which is completely discriminative from other property classes.

3.4.2.1 Suitability of the micro location

Image of the location influences any kind of property. In evaluating the micro location, the suitability for the property type and its target occupiers should be taken into full consideration, in other words, whether the surrounding buildings can satisfy the expectations and needs of the users.

3.4.2.2 Transportation infrastructure

Convenience of the transportation infrastructure is always an important purchasing criterion in the selection of properties. Transportation system includes public transport, roads, subways, railways, airports and docks. As has been mentioned above, it should be emphasized particularly on different aspects in the rating procedure.

3.4.2.3 Local supply facilities

Quality of local supply facilities is closely linked with everyday life, so it is important for residential properties and office buildings, but doesn't mean too much to production properties. This criterion is composed of municipal supplies, shops for daily needs, malls, restaurants, leisure and cultural facilities, service providers (banks, post, etc.), Educational facilities (universities, schools and kindergartens), etc. in the neighborhood.

3.4.2.4 Environmental quality

Negative environmental influences always have a detrimental effect on the selling and leasing of a property, and the safety of a location is another essential criterion as well. Quality of the surroundings is displayed by pollutions (air, noise, water, etc.) and public security.

3.4.3 Physical characteristics

Similar to the evaluation of location criterion, the advantages and disadvantages of property features are central for the decision of property users and those who carry out the transactions. Since properties are usually unique, it isn't possible here to give a complete list and analysis of all possible indicators, and this would in fact not be beneficial for the transparency and acceptance of a rating. Physical characteristics not only cover technical features such as the construction quality, fit out and structural condition, but also cost effectiveness, ecological sustainability and architecture as well. The physical characteristics are analyzed by examining the individual property criteria in relation to their relevance for possible users. In addition, it is compared with the data from relevant market segment.

3.4.3.1 Architecture and construction

This criterion consists of structural quality, construction materials, layout and architectural design. These characteristics might vary substantially for different buildings. The construction age and conditions of maintenance and repairs influence the structural quality immediately. In addition, the architectural design of a property shapes its price and therefore is an indicator of the quality of the sales prospects. For the purpose of rating this criterion, the followings should be considered: whether the design and layout are adequate for its use; whether the building design is acceptable over the long term; whether the construction materials and measures (heat preservation or insulation, waterproof measures, etc.) are in accord with the prescribed standards.

3.4.3.2 Fit out

The internal fit out are important for residential properties and office buildings to the same extent, including structural and intelligent ones. Along with the development of Hi-Tech, the intelligence buildings are applied extensively, highlighting the latter factor day by day. Moreover, the cost effectiveness and effects of environmental protection become essential criteria when thinking about purchasing or renting a property for dwelling and working.

3.4.3.3 Other interior factors

For apartments, the floor and orientation are the most decisive factors in the criteria of physical characteristics. The clear height and area of commercial houses constitute the soft atmosphere for shopping. The interior decoration has some impacts on the image and price of the subject.

3.4.3.4 Plot situation

This point includes the shape of the plot of land, plot ratio, parking spaces and so on. Emphasis should be laid on the efficiency extent of the plot utilization.

3.4.4 Profitability

When real estate investors assess a property in terms of returns, the current or expected cash flow from investing in the property play a central role. Unlike securities, real estate is usually not purchased aiming at short-term resale, but long-term possession, therefore the sustainable cash flow from a property plays a decisive role in its sales prospects. The profit is defined as the difference between income and expenditures and is used for debt repayment, investments or payment of dividends. For rental properties, the rental returns are the relevant income value, while expenditures are operating costs connected with the property, comprising management expenses, tax, the costs of maintenance and repairs and, if necessary, modernization costs. In addition to the simple cash flow analysis, the fourth criteria class also contains the quality of cash flow, which is characterized by the quality of the tenants, the lease agreements conditions, lease-seeking costs, possible vacant periods and uses for other purposes.

3.4.4.1 Level of the developer and operator

Level of the developer and operator is the inherent resource for achieving stable excess profits. This mainly reflects in development qualifications authorized by Ministry of Housing and Urban-Rural Construction, land stock, capital strength, and quality of property management and reorganization of existing brands.

3.4.4.2 Occupier situation

With respect to rented office properties the number of tenants in a property has priority as a rating criterion. A property with many tenants involves a lot of administrative work, but on the other hand the risk of tenant default is distributed over several tenants. A large office building with only one tenant, however, has to be assessed positively in relation to the management costs. The quality of tenants influences the profitability of a property directly. For example, office buildings shared by many well-known enterprises are usually worth more. Another important factor for shopping centers is the mix of tenants because the different suppliers complement each other in terms of product diversification and thus increase the attractiveness of the centre for the customer. In relation to office buildings the tenant mix has a different importance than for commercial properties because there the individual types of use do not necessarily have to complement each other. Furthermore, terms and conditions of the lease agreements affect the medium-term sales prospects of the property. A lease agreement that has a longer term than standard one has to be viewed much more positively in a weakening market and thus it represents a good sales argument in favor of this property.

In the era of brand and cultural taste, the ratio of intangible value in the real estate is more and more great. The brand hotel management groups can bring completely different rental income and letting ratio, and promote the value of hotels as well. The value and rank may ascend distinctly for shopping centers with large brand supermarkets and commercial enterprises.

3.4.4.3 Vacancy situation

For rental properties, in order to evaluating the sustainability of the income, the possibilities in relation to new lease agreements after a tenant has moved out, i.e. the vacant period. Another explicit indicator is the vacancy rate, which displays the rental risk.

3.4.4.4 Operating expenses

For rating purposes all operating expenses have to be analyzed in order to determine their impact on the medium-term sales prospects comprising management costs, real estate tax, expenses of energy and cleaning, costs of maintenance and repairs and modernization costs. Like in real estate valuation, rating also distinguishes between those operating expenses that can be recovered from the tenants and those that cannot be recovered. This distinction is made because the operating expenses that are charged to the tenants are not of essential importance to either the owner and possible seller or a potential buyer. However, it must be remarked that

recoverable operating expenses also constitute a possible obstacle for further letting in their amount exceeds the market costs, which is known as the “secondary rent”

3.5 Rating indicator system for residential properties

3.5.1 Major location factors of residential property rating

3.5.1.1 Maturity of service providers and Educational facilities

Service providers include the hospitals, post offices, shops, supermarkets, etc. in the surroundings. Miniature dwelling projects don't have the capacity of providing the services above, so depend on the existing facilities in the neighbourhood more. The impacts of Educational facilities lie in that whether there is any primary school, middle school of kindergarten on one hand, whether there is any famous university hereabout, because the effect of reputation can raise the housing price markedly.

3.5.1.2 Convenience of public transportation

As the residential properties are stable places used over a long period of time, transportation efficiency becomes a selective factor when deciding the location for dwelling. The activities of people swing among the residential, office, shopping centre and leisure facilities, resulting in the dependence upon convenient public transportation system. Especially along with the expansion of city size, increase of population and severe traffic jam, subways or light rails around the subject affect the house price by a large extent.

3.5.1.3 Environmental quality

The improvement of the living standards for urban residents requires more of the environment, especially for the upscale residences. The environmental quality mainly comprises the green circumstance, natural landscape, air condition, exposure to noise, sanitary engineering, etc.

3.5.2 Major physical characteristics of residential property rating

3.5.2.1 Orientation and floor

In addition to lighting and ventilation, the landscape is another crucial factor. As the sights around being the same, the residence oriented to the south or southeast is the best, but the northwest orientation is the worst. But if the sights are quite diverse, it may be entirely different. For instance, when there is a beautiful seascape in the northern side of the house, its sales prospects are better than that of residences oriented to the south.

The discrepancy of different floors rests with the building height. There is no elevator in low-rise and mid-rise buildings, so the superior flats are located in the medium two floors. However, for high-rise residences, the landscape and air condition are better on higher floors, thus should be rated more positively.

3.5.2.2 Fit out

As for the residential properties, fit out conditions cover the completeness of water supply and drainage, electricity and gas, intelligence extent of the quarter, the outfit of lines such as communications and networks, as well as the setting and quality of communal elevators.

3.5.2.3 Interior decoration

The situation of interior decoration influences the price of new houses a lot. In general cases, the residential properties can be divided into rough residences, briefly decorated residences, commonly decorated residences, exquisitely decorated residences and luxuriously decorated residences according to the fitment extent. However, owing to the depreciation, the impacts on prices and marketability of interior decoration are weaker in second-hand apartments.

3.5.3 Indicator system of residential properties

After defining the four criteria classes for property and market rating, combining the features of residential properties, the rating system can be subdivided into 32 indicators. See Table 3-1 for the rating system of residential properties and the explanations.

Table 3-1 Rating criteria and indicators of residential properties

Objective (A)	Criterion (B)	Sub-criterion (C)	Indicator (D)	Explanation
Long-term stable economic benefit (A)	Market conditions (B1)	Natural factors (C1)	Natural hazards (D1)	Occurrence rate of natural disasters
			Environmental pollutions (D2)	Constitutes of pollutions and severity degree
		Macro economic factors (C2)	Economic stability (D3)	GDP and its growth rate
			Attraction of the city (D4)	Investment sum and its growth rate
		Socio-demographic factors (C3)	Population development (D5)	Population and its growth rate
			Purchasing power (D6)	Disposable income per capita
			Employment condition (D7)	Unemployment rate
		Policy conditions (C4)	Policy attraction (D8)	Regional preferences and limits for residences
		Market segment: Residential (C5)	Price situation (D9)	Level and growth of rents and prices
			Market tension (D10)	Vacancy rate
	Location factors (B2)	Suitability of the micro location (C6)	Image of the location (D11)	whether the surrounding buildings can satisfy the expectations and needs of the users
		Transportation infrastructure (C7)	Convenience of public transportation (D12)	Distances form bus stops and railway stations, number of public lines
			Other transportation conditions (D13)	Connection to exterior roads, crowding of the traffic, distance from freeways, stations and airport
		Local supply facilities (C8)	Municipal energy supplies (D14)	The completeness of water, electricity, heat and other supplies
			Service providers (D15)	Distances from hospitals, post offices, banks, shops and supermarkets
			Educational facilities (D16)	Distances from schools and kindergartens, whether there is any well-known university in the surroundings
		Environmental quality (C9)	Safety of the neighborhood (D17)	Security conditions
			Disadvantageous environmental impacts (D18)	Pollution of noise, air, etc.

Objective (A)	Criterion (B)	Sub-criterion (C)	Indicator (D)	Explanation	
	Physical characteristics (B3)		Landscapes in the surroundings (D19)	Whether there is any seascape, mountain, lake or park around	
		Architecture and construction (C10)	Structural conditions (D20)	The type of construction, building age and conditions of maintenance and repairs	
			Construction materials (D21)	heat preservation or insulation, waterproof measures, etc.	
			Design and layout (D22)	Whether the design and layout are adequate for its use; whether the building design is acceptable over the long term	
			Fit out (C11)	Elevator conditions (D23)	Quality, capacity and average waiting time of the elevators
				Intelligence degree (D24)	Communications, networks and digital conditions
			Other interior factors (C12)	Floor and orientation (D25)	Floor of the apartment in the whole building, orientation of the unit in a tower
				Interior decoration (D26)	Whether decorated or not, type of fitment
			Plot situation (C13)	Parking lot (D27)	Number of parking spaces
		Greenbelt (D28)		Greenbelt ratio	
		Profitability (B4)	Level of the developer and operator (C14)	Property management (D29)	Qualifications of the operator, reorganization of existing brands
				Strength of the developer (D30)	Qualifications of the developer, comprehensive rank
			Net cash flow (C15)	Income level (D31)	Rents and prices
				Operating expenses (D32)	Taxes in relation to real estate, property expenses, costs of energy and cleaning

4. RESEARCH ON PROPERTY AND MARKET RATING APPROACH

4.1 Selection of Rating Approach

On account of the lack of uniform property and market rating system in China, the historical data can't be used for statistical analysis and computerized simulation. As a pioneering research, this paper adopts Delphi Model to determine the weighting of each indicator.

Delphi Model is applied by consulting a group of experts using written letters and forms. The results are settled, concluded, synthesized and dealt with statically, then returned anonymously to every expert to ask their opinions again for the seek of controlled feedback. This procedure is repeated several times till reaching a relatively identical conclusion, so as to provide more practical and feasible references for decision-making. This means not only has the advantage of expert conference and brain-storm, but also overcomes the weakness of psychological disturbance and pressure of the participants.

In surveying the weighting of each rating indicators, we consulted experts including real estate scholars, specialists in the banking industry, property appraisers and officers. Above all, the rating system of each property class and pertinent explanations were made into questionnaires and issued to the experts, asking them to grant weighting to the indicators for each hierarchy. After receiving the first-round responses, all the opinions were gathered and coordinated to form a forecasting schedule. Next, the second-round questionnaire was given out to every participant for anonymous answer back on back again. Through statistical handle of the results, we listed the median, upper and lower quartiles in the third questionnaire. The consultants analyzed and demonstrated once more to propose the conclusive opinion. At this time, the opinions of the experts come to a state of reconciliation or optimization. The weightings of indicators for residential properties are displayed as below.

4.2 Establishment of Property and Market Rating Model

For reasons of compatibility with international property and market rating system, this paper introduces 10 grades to assess the rating scale as well. These numbers may range from 1 to 10. A number indicates the relative compliance with a criterion, whereby 1 means a higher degree of compliance than 2. The following table is the particular meanings of the rating scale.

Table 4-1 Property and market rating scale

1	2	3	4	5
Excellent	Very good	Good	Slightly above average	Average
6	7	8	9	10
Slightly below average	Mediocre	Poor	Very poor	Disastrous

Disregarding the rating 10 (“disastrous”) for now, the 5 (“average”) is really in the middle of the scale. All the ratings on the right hand side of the 5 are worse than the average; all those on the left hand side are better than the average. The rating 10 is awarded if the degree of this

characteristic has disastrous implications for the sales prospects. In this respect, the evaluator should make a very differentiated evaluation between “very poor” and “disastrous”.

5. A CASE STORY

5.1 Property Description

Property name: Central Park

Address: No.6 Chaowai Street, Chaoyang District, Beijing

Property type: Top-grade apartment house

Target occupiers: Successful businessmen of 30-45 with a simple family, who have accepted higher education, identify with western cultures and life style of middle class and earn a lot. The pace of their jobs is fairly rapid, and the career is in the ascending period.

Location: The core of Central Business District in Beijing. It is regarded as a top location with a very good reputation.

Plot of land: Gross land area 105,000m² with the floor area ratio of 3.05, the greenbelt ratio of 42.7%, gross building area 320,000 m², living area 300,000 m², public facilities 20,000 m², 1800 apartments, 200 home-offices, 2000 parking spaces. There is no pollution in the community.

Development: Central Park was developed by four stages. Place des Vosges was completed in June, 2004, Kensington Park in June, 2005; Hampton Park in May, 2007; Belgravia Park in March, 2008.

Developer and operator: The developer of this project is Beijing Premium Real Estate Limited, which is invested by Beijing Vantone Industrial Co., Ltd and Hongkong Land Group. The operator is FPD Savills Property Management Limited.

Cash flow: The average price for Belgravia Park was 35,000RMB/ m². The average rent is \$20/ m² per month and the occupancy ratio of the whole project has arrived at 90%. The property expense is \$6.50/ m² per month. The rental income and operating expenses are in line with the market trends, and have a fine potential for appreciation.

5.2 Rating of the case

5.2.1 Market conditions

¹

5.2.1.1 Natural factors

Beijing's risk due to natural hazards is quite low compared to other cities, though it is affected with moderate earthquakes now and then. This substantiates a rating of 3 (good).

¹ Except for specific notes, the data in this part all come from *Statistical bulletin of national economy and social development of Beijing, 2007* and <http://www.bjstats.gov.cn>, 2008-01-30.

Thanks to the move out of heavy industrial enterprises, the industrial contamination has dropped off; however, gas emissions from the huge number of automobiles are generally high. In addition, sand storms, dust pollution, emission of sulfur dioxide in winter and photochemical smog in summer are all serious or go beyond the standards. The result must therefore be a rating of 7 (mediocre).

The criterion is therefore rated

5.2.1.2 Macro economic factors

The GDP of Beijing increased by 12.3% in 2007, only second to Shanghai. The local revenue increased by 33.6%, ranking the fourth among cities in China. The economic stability receives a rating of 1 (excellent).

The investment for fixed assets of Beijing increased by 17.6% in 2007, and the total amount of retail trade went up by 16%. As the centre of polity and culture in China, there are strong agglomeration effect and headquarter effect in Beijing, the holding of Olympic Games will raise the attraction further. The attraction of the city receives a rating of 1 (excellent).

The criterion is therefore rated

5.2.1.3 Socio-demographic factors

The population development of Beijing has to be regarded as very good due to its high population (rank 2 in China), its positive demographic growth and high population density. Rating 2 (very good)

Although the disposable income per capita in Beijing is among the preceding cities, but not one of the few highest. The purchasing power therefore receives a rating of 2 (very good).

The fair policy regulation and social security system lead to a low unemployment rate in Beijing. The employment condition receives a rating of 1 (excellent).

The criterion is therefore rated

5.2.1.4 Policy conditions

Compared with other cities, the housing policy in Beijing is basically in line with the policy nationwide and put into good effect, without any special preference or restriction. In terms of urban planning, the function arrangement is rather reasonable.

The criterion is therefore rated 3 (good).

5.2.1.5 Market segment: Residential

The average price for commercial residential properties arrived at 11454RMB m² in 2007, increasing by 12.8%. The rent averaged at 2249RMB/unit per month, increasing by 20.78%.²Beijing is among the few cities of highest price, with positive growth trend. The price situation receives a rating of 1 (excellent).

² Source: *Report on rental market of Beijing in 2007*. <http://re.icxo.com>, 2007-12-24.

The overall vacancy rate of top-grade residential market of Beijing is 24.68 in the fourth quarter of 2007.³ According to international conventions, the vacancy rate between 5% and 10% is reasonable, between 10% and 20% is within danger zone, and above 20% belongs to severe overstock zone. Consequently, the vacancy situation is quite negative in this case, but no evident bubbles have been detected. The market tension receives a rating of 8 (poor).

The criterion is therefore rated

The final rating for the first criteria class is

5.2.2 Location factors

5.2.2.1 Suitability of the micro location

The micro location is the core area of CBD, which is the base of international financial industry, modern service trade and communications of economy and culture. Here gathers world-class office buildings, exhibition centers, hotels, shopping malls and other modern business facilities, as well as luxury apartments, public infrastructure and recreational facilities. The surrounding buildings and the harmonious external environment increase the attractiveness of the property even more. The suitability of the micro location for the property type and target occupiers is in every relevant aspect far above average. The criterion is therefore rated 1 (excellent).

5.2.2.2 Transportation infrastructure

The quarter's connection to public transport facilities is excellent. Buses and undergrounds are within walking distance. There are many bus lines, offering convenience for going about. The convenience of public transportation receives a rating of 1 (excellent).

It's only about 3 kilometers from Beijing Station and 25 minutes' ride from the Capital International Airport. The motorways reach each building directly, making the connection to exterior roads fairly good. The amount of traffic at the location is typical of inner-city areas in large cities. Even after rush hour there may be traffic congestion in the quarter, resulting in the poor conditions for private car users. Other transportation conditions receive a rating of 2 (very good).

The criterion is therefore rated

5.2.2.3 Local supply facilities

The water, electricity and gas are all supplied by the municipality. Every household is equipped by central-air conditioning and 24-hour municipal supply of hot water. The municipal energy supplies are top-grade in Beijing, therefore rated 1 (excellent).

There are ample service providers in the direct vicinity: a more than sufficient number of shops for daily needs, hospitals, banks, post offices, recreational and leisure amenities, etc. The quarter is among the top locations in Beijing in terms of gastronomy. The service providers receive a rating of 1 (excellent).

³ Source: *The vacancy rate of top-grade residences in Beijing will increase, the supply will exceed the demand by 2000 units.*
<http://bj.house.sina.com.cn>, 2008-01-24.

The subject is very close to schools and kindergartens, and a community kindergarten will be built soon. There are one or two common colleges around, quite far from key high schools of the city, creating a general educational atmosphere. The educational facilities receive a rating of 4 (slightly above average).

The criterion is therefore rated

5.2.2.4 Environmental quality

The quarter is surrounded by embassies and consulates, thereby in good order. The community is installed with 24-hour security TV monitor, door entry module, electronic Patrol, garage management, emergency broadcasting, intelligent fire alarm and household security equipment. The safety of the neighborhood receives a rating of 1 (excellent).

Without any polluting enterprise around, there is no emission of industrial waste gas or water. Owing to the traffic congestion, the quarter is exposed to some noise, dust and harmful gases. However, the project doesn't draw near to the main roads, so the noise is relatively less. The disadvantageous environmental impacts receive a rating of 3 (good).

Ritan Park (covering an area of about 20 hectares) is within 10 minutes' walking distance. CBD Humanity Park in construction is located to the south of the subject, which can be overlooked from the window. The landscapes in the surroundings receive a rating of 3 (good).

The criterion is therefore rated

The final rating for the second criteria class is

5.2.3 Physical characteristics

5.2.3.1 Architecture and construction

The major structure is of reinforced concrete shear wall system, with grade 2 for structural safety, grade 8 for anti-earthquake and 50 years of the design life span. All these indicators have met the relative standards for residences. The first part of the whole project was built in 2004, giving birth to a high residual ratio. The structural conditions receive a rating of 3 (good).

All compositions of the buildings are made of high quality materials. Environmental protection and energy conservation issues reflect in terms of material selection, drainage of domestic sewerage and so on. The construction materials receive a rating of 1 (excellent). Architecturally the buildings are aesthetically pleasing. Although it doesn't stand out from other prime assets in the proximity with respect to its design and layout, it does, however, represent the climax of the architecture of its period and location. The building's design will comply with users' demands in the long term as well. The design and layout receive a rating of 2 (very good).

The criterion is therefore rated

5.2.3.2 Fit out

The project has an average of one elevator per 60 households, in line with the "Residential Design Standards", but there is a certain gap from that of luxury residences, which should be one elevator per 40 households. The elevator is of joint-venture brand FujiTec, one of the top 10 elevator brands, with fair quality and operation. The capacity is appropriate (1000kg), and every elevator can accommodate 10 persons. Due to the fewer elevators, the elevator conditions shall only be awarded the rating of 4 (slightly above average). The facilities of telephones (2 lines per household), cable television, satellite television, local network, internet, building automation system and IC card management are well appointed. Compared with other properties of the same class, this project has a high degree of intelligence. The intelligence degree receives a rating of 2 (very good).

The criterion is therefore rated

5.2.3.3 Other interior factors

The principal bedrooms of each unit are towards the south, which is highly attractive to the consumers. 70% of the clear height indoor is not lower than 2.6m, meeting the needs of the psychology and behavior. As a rating of the whole project, the floor of individual apartment will not be considered. The floor and orientation receive a rating of 1 (excellent). The households are exquisitely decorated, using the entire kitchen. The materials for decoration are of high quality and environmental-friendly, and the fitment is in a faddish and simple style, meeting the needs of occupiers. The interior decoration receives a rating of 1 (excellent).

The criterion is therefore rated 1 (excellent).

5.2.3.4 Plot situation

There are 2000 mobile parking spaces within the community. In addition to the underground garage, a few spaces are provided on the ground for temporary parking. The ratio of households to parking spaces is 1:1.3, fully satisfying the demand. The Parking lot receives a rating of 1 (excellent).

The greenbelt ratio arrives at 42.7%; in despite of not the highest of the same class, it surpasses the standard for greening residence (40%), which is distinct from other rivals in the vicinity. The greenbelt receives a rating of 2 (very good).

The criterion is therefore rated

The final rating for the third criteria class is

5.2.4 Profitability

5.2.4.1 Level of the developer and operator

The operator FPD Savills Property Management Limited is one of the five major international real estate consultants which is a member of the SAVILLS IPC Group listed in London. In recent years, it has always been among the top three property management companies in the

mainland. Besides the provision of property management, FPD Savills offers a series of customized asset management service integrating day-to-day management (vacant housing management), rental management, financial management. The property management receives a rating of 1 (excellent).

The developer Beijing Premium Real Estate Limited is the combination of the best wealth in terms of professional experience, financial strength and human resources, with the best qualification for real estate development. The strength of the developer receives a rating of 1 (excellent).

The criterion is therefore rated 1 (excellent).

5.2.4.2 Net cash flow

The existing sales and lease agreements show a situation in line with the market trend. In virtue of the population among clients, the rental growth potential is quite strong. The income level receives a rating of 3 (good).

The amount of operating expenses is in keeping with the market. They do not offer advantages or disadvantages in relation to the sales prospects of the property. The operating expenses receive a rating of 5 (average).

The criterion is therefore rated 1

The final rating for the last criteria class is

In conclusion, the property and market rating for this study equals to

6. CONCLUSION

6.1 Major Conclusions

1. This paper makes a sufficient study on the rating provisions in Basel II, as well as the intension of property and market rating to lay a solid theoretical basis for an integral and scientific property rating model.
2. By way of comprehensive analysis, reference and comparison, the research subdivides the influencing factors in to four criteria: market conditions, location factors, physical characteristics and profitability. According to the features of different property categories, the criteria classes are be divided into several sub-criteria further and each of them contains several indicators. The Rating indicator system for residential properties is established on this basis.
3. This paper adopts Delphi Model to determine the weighting of each indicator. Through three rounds of scoring and two times of feedback, a consistent result of the weighting is achieved. This paper introduces 10 grades to assess the rating scale of each indicator, , whereby 1 means a higher degree of compliance than 2. The final rating can be educed by weighting layer upon layer.
4. A representative case is chosen to stimulate the property and market rating by the constructed system, which has verified the result in comparison with the market position and development future.

6.2 Further Problems for Study

1. As there exist many factors impacting the property values and risks, scholars home and abroad selected different indicators for evaluation. The indicator system of this paper is based on the situation of China and property features, using foreign experience for reference as well. Whether it is representative and simplified should be discussed with more professionals.
2. Currently, various commercial banks have set up their own internal rating system for auditing of mortgage loans, and each has its unique features. However, due to the confidentiality system of banks, we couldn't compare the rating result of this paper with relevant data. The property and market rating system can be modified according to the rating models of diverse banks when it is mature, to make it more applicable.
3. As a pioneering research, we are unable to use the existing data to establish qualitative rating model, therefore adopting Delphi Model to determine the weighting of each indicator. When there are abundant data, it can be combined with AI technique, so as to create a more scientific and handy rating system.
4. This paper only takes the basic weighting of the criteria into consideration. The correction factors can be added into the system when there is any extreme situation, which is like the dynamic weighting in Europe.

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BIOGRAPHICAL NOTES

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