



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

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# 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.



# 1 Research background

- On June 26th 2004, the “game rules” of international bank industry, New Basel Capital Accord (Basel II) reached a final version.
- 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.



Olympic Station Nest  
Photo by Qu, 18 May 2008



# 1 Research background

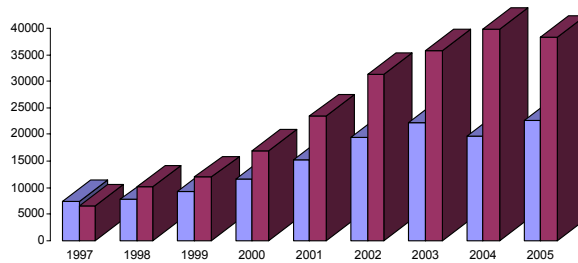
- There is not any normal property and market rating system or professional rating agencies in China.
  - Developers lay particular emphasis on profitability and balance analysis of financing in the investment stage
  - Financial institutions mainly investigate the repayment potential of debt when evaluating 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.
  - The classification and rating of urban land is mass assessing of the land, excluding buildings



## Real Estate Market in China



Ten Thousand m<sup>2</sup>



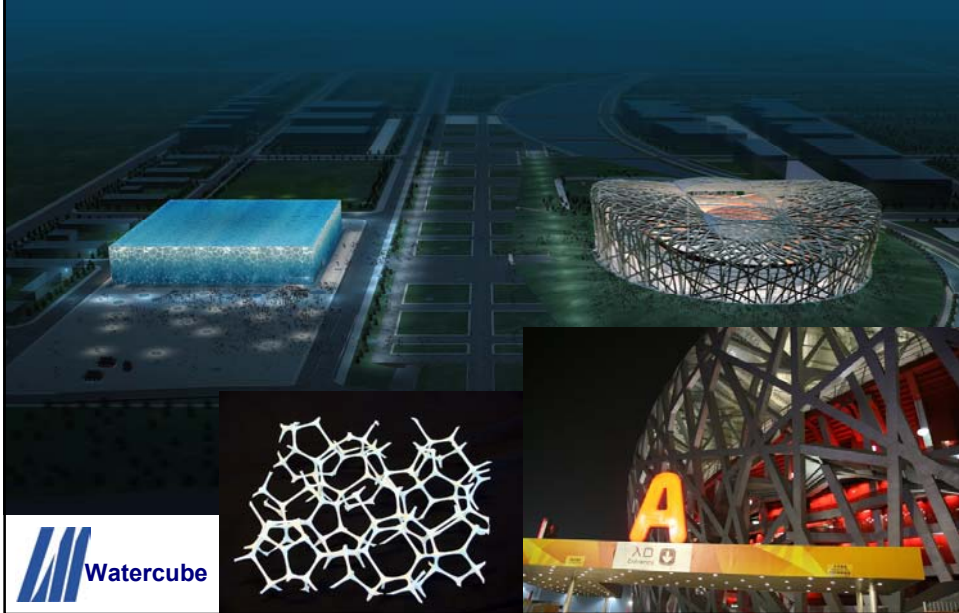
The Developed Land Area p.a



Source: Statistic Bureau of China

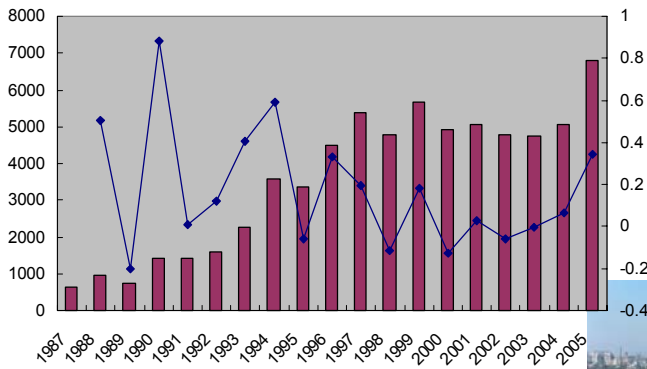


## Big Built Objects for Olympic Game 2008 in Beijing



## Residential Market in Beijing

RMB ¥



Average House Price RMB/m<sup>2</sup>



Source: Statistic Bureau of China



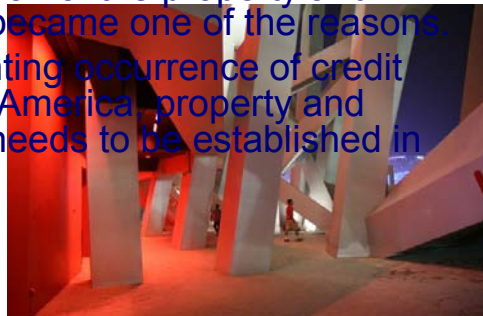
## 2 Research significance

- 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.
- The basic requirement in the real estate sector was decisive for developing a new and appropriate rating system.



## 2 Research significance

- The turbulence of global finance markets arisen by the crisis of sub mortgage loans in America has knolled the alarm bell for real estate loans in China.
- 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.
- 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.



## 2 Research significance

- 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.





## 3 Property rating standards in Basel II



	Strong	Good	Satisfactory	Weak
<b>Financial strength</b>				
Market conditions	Few competing suppliers OR substantial and durable advantage in location, cost, or technology. Demand is strong and growing.	Few competing suppliers OR better than average location, cost, or technology but this situation may not last. Demand is strong and stable.	Project has no advantage in location, cost, or technology. Demand is adequate and stable.	Project has worse than average location, cost, or technology. Demand is weak and declining.
Financial ratios (e.g. <i>debt service coverage ratio (DSCR)</i> , <i>loan life coverage ratio (LLCR)</i> , <i>project life coverage ratio (PLCR)</i> , and <i>debt-to-equity ratio</i> .)	Strong financial ratios considering the level of project risk; very robust economic assumptions.	Strong to acceptable financial ratios considering the level of project risk; robust project economic assumptions.	Standard financial ratios considering the level of project risk.	Aggressive financial ratios considering the level of project risk.
Stress analysis	The project can meet its financial obligations under sustained, severely stressed economic or sectoral conditions.	The project can meet its financial obligations under normal stressed economic or sectoral conditions. The project is only likely to default under severe economic conditions.	The project is vulnerable to stresses that are not uncommon through an economic cycle, and may default in a normal downturn.	The project is likely to default unless conditions improve soon.



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<b>Financial structure</b>				
Duration of the credit compared to the duration of the project	Useful life of the project significantly exceeds tenor of the loan	Useful life of the project exceeds tenor of the loan	Useful life of the project exceeds tenor of the loan	Useful life of the project may not exceed tenor of the loan.
Amortisation schedule	Amortising debt	Amortising debt	Amortising debt repayments with limited bullet payment.	Bullet repayment or amortising debt repayments with high bullet repayment.
<b>Political and legal environment</b>				
Political risk, including transfer risk, considering project type and mitigants	Very low exposure; strong mitigation instruments, if needed.	Low exposure; satisfactory mitigation instruments, if needed.	Moderate exposure; fair mitigation instruments.	High exposure; no or weak mitigation instruments
Force majeure risk (war, civil unrest, etc),	Low exposure.	Acceptable exposure	Standard protection	Significant risks, not fully mitigated
Government support and project's importance for the country over the long term	Project of strategic importance for the country (preferably export-oriented). Strong support from Government	Project considered important for the country. Good level of support from Government	Project may not be strategic but brings unquestionable benefits for the country. Support from Government may not be explicit.	Project not key to the country. No or weak support from Government
Stability of legal and regulatory environment (risk of change in law)	Favourable and stable regulatory environment over the long term	Favourable and stable regulatory environment over the medium term	Regulatory changes can be predicted with a fair level of certainty	Current or future regulatory issues may affect the project
Acquisition of all necessary supports and approvals for such relief from local content laws	Strong	Satisfactory	Fair	Weak

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Enforceability of contracts, collateral and security 7	Contracts, collateral and security are enforceable.	Contracts, collateral and security are enforceable.	Contracts, collateral and security are considered enforceable even if certain non-key issues may exist.	There are unresolved key issues in respect of actual enforcement of contracts, collateral and security.
<b>Transaction characteristics</b>				
<i>Design and technology risk</i>	Fully proven technology and design	Fully proven technology and design	Proven technology and design – start-up issues are mitigated by a strong completion package	Unproven technology and design / Technology issues exist and/or complex design
<i>Construction risk</i>				
Permitting and siting	All permits have been obtained.	Some permits are still outstanding but their receipt is considered very likely.	Some permits are still outstanding but the permitting process is well defined and they are considered routine.	Key permits still need to be obtained and are not considered routine. Significant conditions may be attached.
Type of construction contract	Fixed-price date-certain turnkey construction EPC (engineering and procurement contract)	Fixed-price date-certain turnkey construction EPC	Fixed-price date-certain turnkey construction contract with one or several contractors	No or partial fixed-price turnkey contract and/or interfacing issues with multiple contractors
Completion guarantees	Substantial liquidated damages supported by financial substance AND/OR strong completion guarantee from sponsors with excellent financial standing	Significant liquidated damages supported by financial substance AND/OR completion guarantee from sponsors with good financial standing	Adequate liquidated damages supported by financial substance AND/OR completion guarantee from sponsors with good financial standing	Inadequate liquidated damages or not supported by financial substance or weak completion guarantees.

Department of Land and Real Estate Management of RUC				
	Strong	Good	Satisfactory	Weak
Track record and financial strength of contractor in constructing similar projects.				
<i>Operating risk</i>				
Scope and nature of O & M contracts	Strong long-term O&M contract, preferably with contractual performance incentives, and/or O&M reserve accounts.	Long-term O&M contract, and/or O&M reserve accounts.	Limited O&M contract or O&M reserve account.	No O&M contract: risk of high operational cost overruns beyond mitigants.
Operator's expertise, track record, and financial strength	Very strong, OR committed technical assistance of the sponsors	Strong	Acceptable	Limited/weak, OR local operator dependent on local authorities
<i>Off-take risk</i>				
(a) If there is a take-or-pay or fixed-price off-take contract:	Excellent creditworthiness of off-taker; strong termination clauses; tenor of contract comfortably exceeds the maturity of the debt	Good creditworthiness of off-taker; strong termination clauses; tenor of contract exceeds the maturity of the debt	Acceptable financial standing of off-taker; normal termination clauses; tenor of contract generally matches the maturity of the debt	Weak off-taker; weak termination clauses; tenor of contract does not exceed the maturity of the debt
 				

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(b) If there is no take-or-pay or fixed-price off-take contract:	Project produces essential services or a commodity sold widely on a world market; output can readily be absorbed at projected prices even at lower than historic market growth rates.	Project produces essential services or a commodity sold widely on a regional market that will absorb it at projected prices at historical growth rates.	Commodity is sold on a limited market that may absorb it only at lower than projected prices.	Project output is demanded by only one or a few buyers OR is not generally sold on an organised market.
<i>Supply risk</i>				
Price, volume and transportation risk of feed-stocks; supplier's track record and financial strength	Long-term supply contract with supplier of excellent financial standing.	Long-term supply contract with supplier of good financial standing.	Long-term supply contract with supplier of good financial standing – a degree of price risk may remain.	Short-term supply contract or long-term supply contract with financially weak supplier – a degree of price risk definitely remains.
Reserve risks (e.g. natural resource development)	Independently audited, proven and developed reserves well in excess of requirements over lifetime of the project	Independently audited, proven and developed reserves in excess of requirements over lifetime of the project	Proven reserves can supply the project adequately through the maturity of the debt.	Project relies to some extent on potential and undeveloped reserves.
<b>Strength of Sponsor</b>				
Sponsor's track record, financial strength, and country/sector experience	Strong sponsor with excellent track record and high financial standing	Good sponsor with satisfactory track record and good financial standing	Adequate sponsor with adequate track record and good financial standing	Weak sponsor with no or questionable track record and/or financial weaknesses
 				



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Sponsor support, as evidenced by equity, ownership clause and incentive to inject additional cash if necessary	Strong. Project is highly strategic for the sponsor (core business – long-term strategy)	Good. Project is strategic for the sponsor (core business – long-term strategy)	Acceptable. Project is considered important for the sponsor (core business)	Limited. Project is not key to sponsor's long-term strategy or core business
<b>Security Package</b>				
Assignment of contracts and accounts	Fully comprehensive	Comprehensive	Acceptable	Weak
Pledge of assets, taking into account quality, value and liquidity of assets	First perfected security interest in all project assets, contracts, permits and accounts necessary to run the project	Perfected security interest in all project assets, contracts, permits and accounts necessary to run the project	Acceptable security interest in all project assets, contracts, permits and accounts necessary to run the project	Little security or collateral for lenders; weak negative pledge clause
Lender's control over cash flow (e.g. cash sweeps, independent escrow accounts)	Strong	Satisfactory	Fair	Weak
Strength of the covenant package (mandatory prepayments, payment deferrals, payment cascade, dividend restrictions...)	Covenant package is strong for this type of project Project may issue no additional debt.	Covenant package is satisfactory for this type of project Project may issue extremely limited additional debt.	Covenant package is fair for this type of project Project may issue limited additional debt.	Covenant package is insufficient for this type of project Project may issue unlimited additional debt.
Reserve funds (debt service, O&M, renewal and replacement, unforeseen events, etc)	Longer than average coverage period, all reserve funds fully funded in cash or letters of credit from highly rated bank.	Average coverage period, all reserve funds fully funded.	Average coverage period, all reserve funds fully funded.	Shorter than average coverage period, reserve funds funded from operating cash flows.

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<h2 style="text-align: center;">Principles of Rating</h2> <ul style="list-style-type: none"> <li>■ Independence</li> <li>■ Objectivity</li> <li>■ Consistency</li> <li>■ Attention to qualitative analysis</li> <li>■ Concerning with long-term fundamentals and their changes</li> </ul>

## Fields of application for property and market rating

- Loan analysis in the process of granting property loans
- Risk analysis of portfolios for securitization purposes
- Investment and disinvestment decisions
- Portfolio analysis and control



## 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 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.



## 4 Design of property and market rating indicator system in China

- Principles of designing indicator system: integrality, rationality, consistency, representativeness and maneuverability.
- Basic frame of the indicator system: objective, criteria and indicator.
- Property classes in the rating system: residential properties, commercial properties, office buildings and production properties.



## Rating criteria and indicators for residential properties

Objective (A)	Criteria (B)	Sub-criteria (C)	Indicators (D)	Explanations
Sustainable quality in relevant markets (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



## Rating criteria and indicators for residential properties

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.
		Landscapes in the surroundings (D19)	Whether there is any seascape, mountain, lake or park around



## Rating criteria and indicators for residential properties

Physical characteristics (B3)	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



## Rating criteria and indicators for residential properties

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



## 5 Property and market rating approach

- Delphi model
- Overall evaluation method
  - Analytical hierarchy process (AHP)
  - Principle components analysis (PCA)
  - Wall proportional evaluation method
- Credit scoring model
  - Traditional statistical model
  - Option pricing model
  - Expert System
  - Neural network model



## A case study

- 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
- Location: The core of Central Business District in Beijing
- Plot of land: Gross land area 105,000m<sup>2</sup> with the floor area ratio of 3.05, the greenbelt ratio of 42.7%. There is no pollution in the community.
- Cash flow: The average price for Central Park was 35,000RMB/ m<sup>2</sup>. The average rent is \$20/ m<sup>2</sup> per month and the occupancy ratio of the whole project has arrived at 90%.



## The Central Park Apartments in Beijing



- **Market conditions: 3(good)**
  - Natural factors: 6 (slightly below average)
    - Natural hazards: 3 (good)
    - Environmental pollutions: 7 (mediocre)
  - Macro economic factors: 1 (excellent)
    - Economic stability: 1 (excellent)
    - Attraction of the city: 1 (excellent)
  - Socio-demographic factors: 1(excellent)
    - Population development: 1 (excellent)
    - Purchasing power: 2 (very good)
    - Employment condition: 1 (excellent)
  - Policy conditions: 3 (good)
  - Market segment: 5 (average)
    - Price situation: 1 (excellent)
    - Market tension: 8 (poor)
- **Location factors: 2 (very good)**
  - Suitability of the micro location: 1 (excellent)
  - Transportation infrastructure: 1(excellent)
    - Convenience of public transportation: 1 (excellent)
    - Other transportation conditions: 2 (very good)
  - Local supply facilities: 2 (good)
    - Municipal energy supplies: 1 (excellent)
    - Service providers: 1 (excellent)
    - Educational facilities: 4 (slightly above average)
  - Environmental quality: 2 (good)
    - Safety of the neighborhood: 1 (excellent)
    - Disadvantageous environmental impacts: 3 (good)
    - Landscapes in the surroundings: 3 (good)



- **Physical characteristics: 2 (very good)**
  - Architecture and construction: 2 (very good)
    - Structural conditions: 3 (good)
    - Construction materials: 1 (excellent)
    - Design and layout: 2 (very good)
  - Fit out: 3 (good)
    - Elevator conditions: 4 (slightly above average)
    - Intelligence degree: 2 (very good)
  - Other interior factors: 1 (excellent)
    - Floor and orientation: 1 (excellent)
    - Interior decoration: 1 (excellent)
  - Plot situation: 1 (excellent)
    - Parking lot: 1 (excellent)
    - Greenbelt: 2 (very good)
- **Profitability: 3 (good)**
  - Level of the developer and operator: 1 (excellent)
    - Property management: 1 (excellent)
    - Strength of the developer: 1 (excellent)
  - Net cash flow: 3 (good)
    - Income level: 2 (very good)
    - Operating expenses: 5 (average)
- **In conclusion, the property and market rating for this study equals to  $3 \times 30\% + 2 \times 30\% + 2 \times 25\% + 2 \times 15\% = 2$  (very good).**



## Case analysis

- The overall property and market rating of 2 (very good) for Central Park Apartment shows optimistic sales prospective, low risk and superior sustainable quality in its relevant market, with high investment value and eminent appreciation potential.
- In this case, the rating result agrees with the market position and development trend, thereby displaying the sustainable quality of the property in its relevant market perfectly.



## Conclusion

- The property and market rating system established in this paper has a certain degree of application and creditability.
- It can provide reference basis for
  - financial institutions to carry out loan review,
  - investors to make investment decisions,
  - real estate professionals to engage in portfolio analysis and risk control.





*Terminology is crucial.*

*We cannot communicate effectively  
when a term does not mean the same  
to everyone.*

-Jack P. Friedman



**Thank You!**  
**Tack!**

**Welcome to Beijing Olympic 2008**

