

Cadastral Management Information System for Better Land Valuation in Emerging Economies

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Key words: Cadastral management information systems, emerging economies, land valuation, real estate finance, investment management

SUMMARY

The Hanoi declaration on land acquisition for emerging economies demonstrates the need for the land administration system to manage the delivery of land for essential developments, private sector development and changes of land uses in response to evolving social and economic demands. In the words of Stig enemark – "Land acquisition is a global and complex problem area. So good governing skills for conducting the processes of land acquisition whether they are based on compulsory means or voluntary agreements are to be ensured. Processes must be efficient, fair and legitimate."

Land acquisition forms one of the apriority sources in the pipeline for land valuation. In some jurisdictions, legal provisions on market-based land valuation are often missing from the legislation; long term benefits for affected land-users and residential community are not secured; and transparent mechanisms to allow the community and social associations to participate in the compulsory land acquisition process are absent. As a result, affected land-users do not always receive adequate compensation for resettlement or support for alternative accommodation, livelihood and employment. Complaints related to levels of compensation and resettlement still account for the majority of all complaints received.

In practice acquisition of land for investment projects can face challenges during determining the land price by authorized state bodies for computing compensation and resettlement as compared to market prices. Thus compensation provided by government to affected land users to reestablish themselves is not sufficient enough. "There is an absence of clearly defined mechanisms and periodical implementation for land inspection by upper level administrative authorities over its lower level authorities; inspection is not undertaken on a regular basis. Violations are not detected and practices are not reformed in a timely manner (Vo, 2009).

This paper enunciates the inter linkage between land information systems and how it can aid in better land acquisition. An effort is made to explain the land valuation and investment decisions in emerging economies with better land information systems in place not specific to Taipei as a case study. A better land information system can lead to responsible property investment and will encourage market players to appreciate and therefore value.

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1. INTRODUCTION

Land acquisition has a number of connotations, it is the process by which local and national governments obtain land and premises for development purposes, when they consider being at the best interest of the community. The practices of land acquisitions can vary from region to region. The complexity of land acquisitions increase if the valuation offered is far less than market price. However the basic principles perceived are quite similar even though the practise may vary from nation to nation. In all cases the owners or occupiers are denied their property rights for overriding public interest.

Hanoi declaration for land acquisition provides valuable insights about land acquisition – “Land acquisition may be carried out through voluntary agreements or through compulsory means (such compulsory purchase) to secure land delivery for development. In these processes good governance is fundamental to achieve the benefits of the protection of formal property rights and informal land uses”. Valuation is undertaken to determine the value of loss to the property owner, tenant or occupier in the event of compulsory acquisition of their landed property assets.

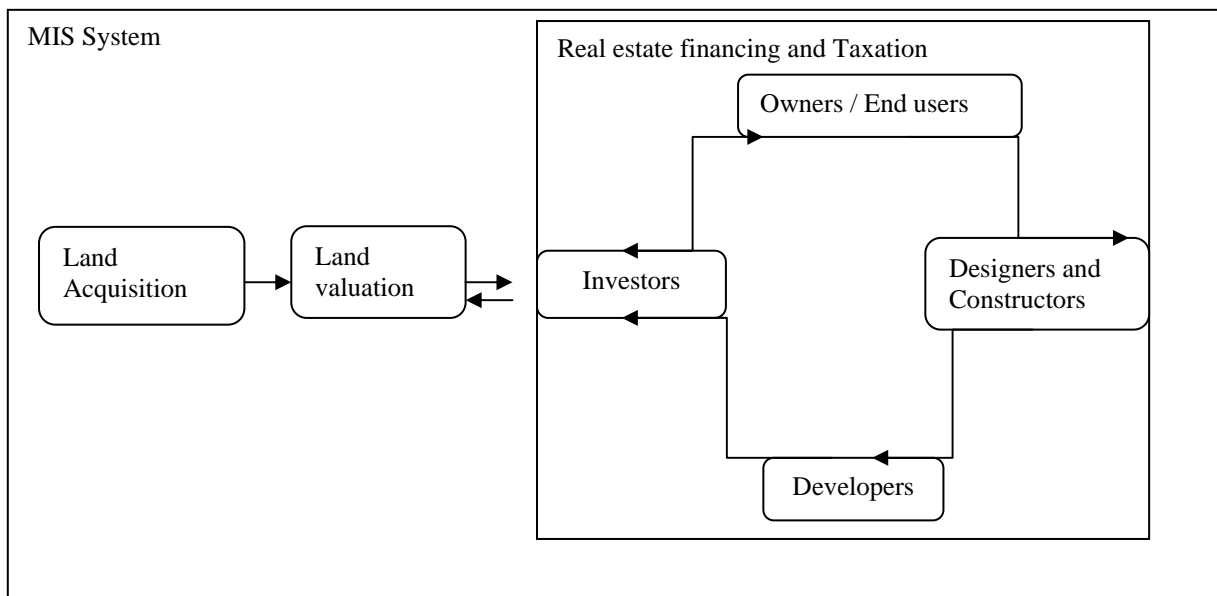


Fig 1: MIS system overarching the cycle of activities from acquisition to financing.

2. LAND INFORMATION SYSTEMS IN EMERGING ECONOMIES

Most emerging economies increasingly rely on cadastral management information systems (CMIS) moving into cadastral surveying as resources become available. Land information system is one of the emerging new tools available links GIS, remote sensing and field surveying is described by UN-HABITAT (2008) in to one tool. A comprehensive information system to support a range of functions, especially land use planning and property taxation. A MIS based CMIS, however, offers obvious advantages for managing demographic movement, consultation, and planning processes associated with land delivery and especially compulsory acquisition. The land information systems have to be robust enough to encompass all the changing dynamics in emerging economies.

The dynamic nature of these relationships through CMIS results from drivers such as technology, sustainable development, globalisation and economic reform (Ting and Williamson 1999). Over the past ten or so years, specific developments that are altering people to land relationships include: the increased use of the internet, web applications, launch of Google and its related Google Maps and Google Earth, Spatially Enabled Government (SEG), Spatial Data Infrastructures (SDIs), spatial enablement, eServices and eGovernment, the growing recognition of climate change and sustainable development as important issues, along with poverty reduction and natural resource management. A CMIS that supports these changing relationships are essential for land administration and cadastral systems.

In emerging economies, the use of land information systems is growing utmost importance due to existing large information datasets. As an illustration, cadastral and LIS have been progressively taking place in Australia for nearly a decade. “ the reforms have been generally concerned with establishing in the first instance a complete computerized data base of land parcels and associated ownership and valuation details, in each state of jurisdiction”(Ian P Williamson 1987)

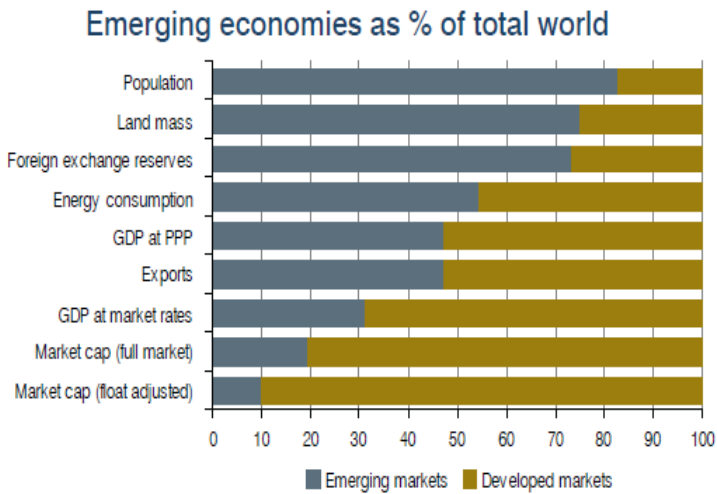
3. LAND INFORMATION SYSTEMS FOR VALUATION

Valuers interpret earlier performance in order to predict how buyers and sellers will behave in the future, when relevant circumstances may well have changed. They incorporate the financial benefit of sustainable features in real estate only to the extent that market evidence or emerging trends demonstrate the relevance of sustainable features on demand. “Valuers have a major role in facilitating companies in their challenge, by encouraging realistic perceptions and expectations of sustainable outcomes, and by demonstrating the business case for sustainable investment within their valuations, so that the market supply of and demand for sustainable buildings and practices becomes mainstream throughout the world.” (Francis plimmer, 2009)

Valuation at discretion without considering market price data can lead to misleading results. A discrete data set with user defined quantitative research can aid the Valuers while defining the investment needed for the land resource itself. So land information system with discrete

data analysis provided a feasible valuation routes to the valuers.

4. LAND VALUATION AND INVESTMENT DECISIONS



Land valuation and investment decisions are as illustrated in the figure 3. There is an emerging trend in investment decisions in cities like hongkong and fair amount of development trend in Taiwan, Taipei. The prospects for the emerging markets value remains quite bright.

Fig 2: Market data as of September 2008 Source (Merill lynch)

They are at the cusp of credit growth cycle and are arguably identified to capture more of the global market equity capitalization over time, as the region boasts of 75% of land mass. Although the 75% of the land mass cannot be claimed to be valued, it is a significant source for the valuation. A significant source for land valuation would mean an equivalent source for investment decisions.

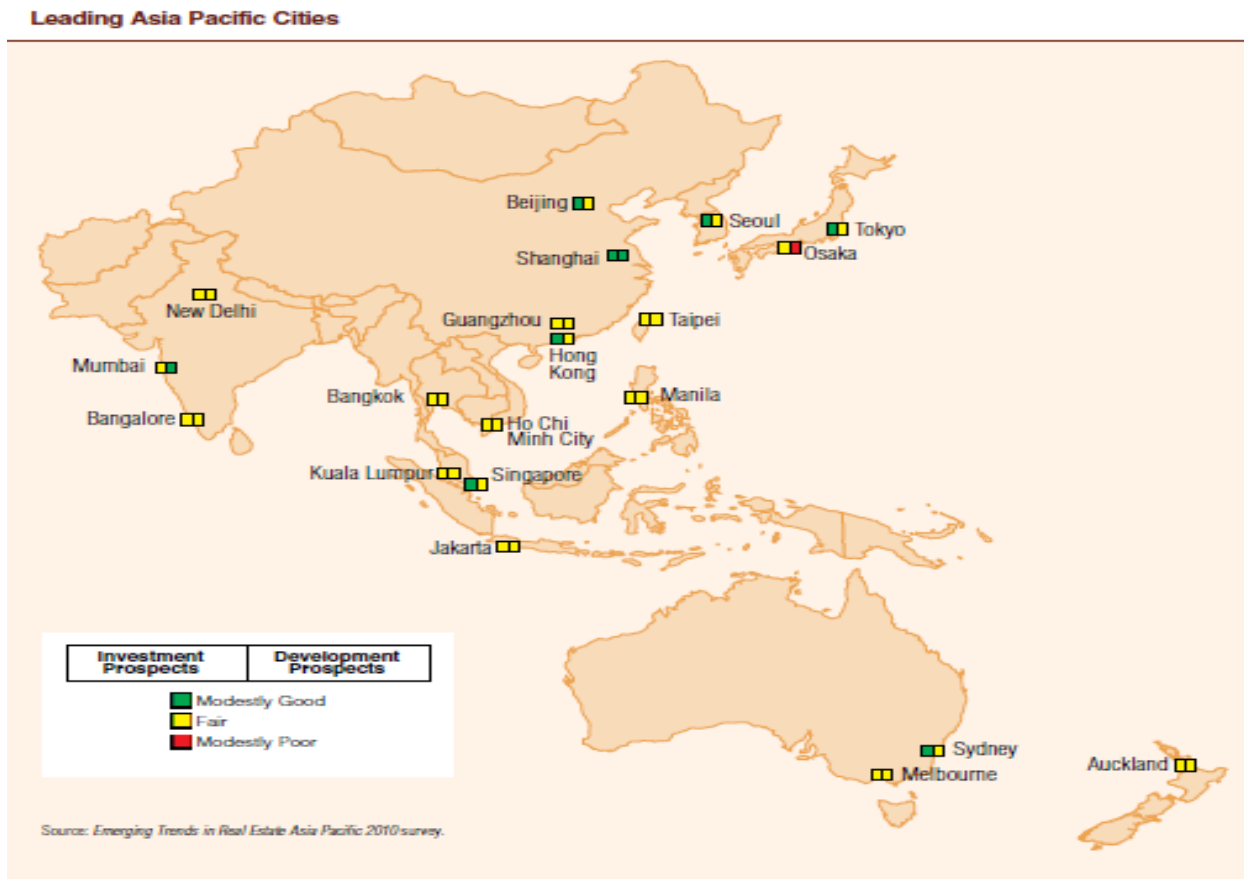
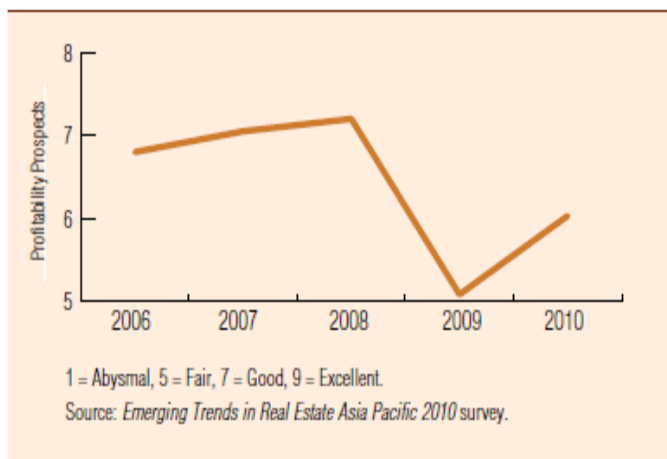


Fig 3: Emerging trends in Real estate APAC 2010 survey.

5. LAND INFORMATION SYSTEMS AND REAL ESTATE CADASTRE

Historical Real Estate Firm Profitability Trends



The real estate profit trends are growing quite strong since 2009 after the financial crisis. Minimising costs in an efficient way by using land information systems is one source of the inclination in trend towards profitability.

Minimisation of costs can only be made possible if the real estate cadastre is managed through land information system.

Fig 4: Real estate firm profitability trends

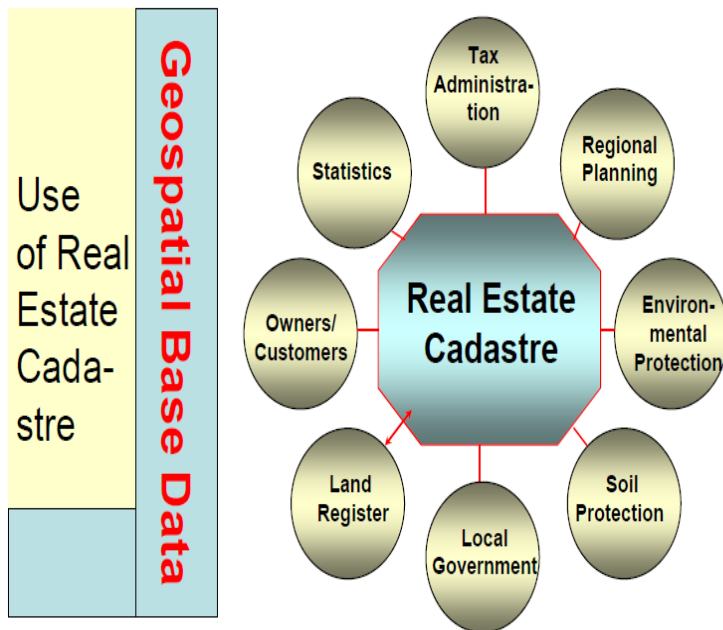


Fig 5: Real estate cadastre

Typically a real estate cadastre can encompass all the data sources ranging from land registration, land valuation and towards better taxation data.

“The real estate industry is struggling to maintain profitability and to try to gain Market share. Real estate practitioners feel they are significantly disadvantaged by the “black brokers” and the attorneys who practice real estate in violation of the laws. Without prompting, most Interviewees indicated that the

Legitimate companies should organize and civilize their marketplace. What appears to be needed is to bring them together, define a common code of ethics and bring training to the marketplace to increase their effectiveness and their market share.” (Butler 2004)

Real estate profitability is hindered by different issues as shown in fig 6. Problems for real estate and investment development 2010. It is clearly witnessed that the land costs show very high importance. Land availability issues are also very high in importance. It is particularly in this case a land information system becomes recommendable. A Real estate cadastre clubbed with CMIS can minimise the land costs in addition to providing adequate information on land availability.

Responsible property investing rates at around the scale of 3.27. This real estate development issue rating can be minimised if reliable information is available to the investors. Reliable information here would mean information about the valuers, market prices, possible appreciation or depreciation of the land value. Infrastructure funding are other real estate development issues that can also be reduced in importance through CMIS.

Importance of Various Trends/Issues/Problems for Real Estate Investment and Development 2010

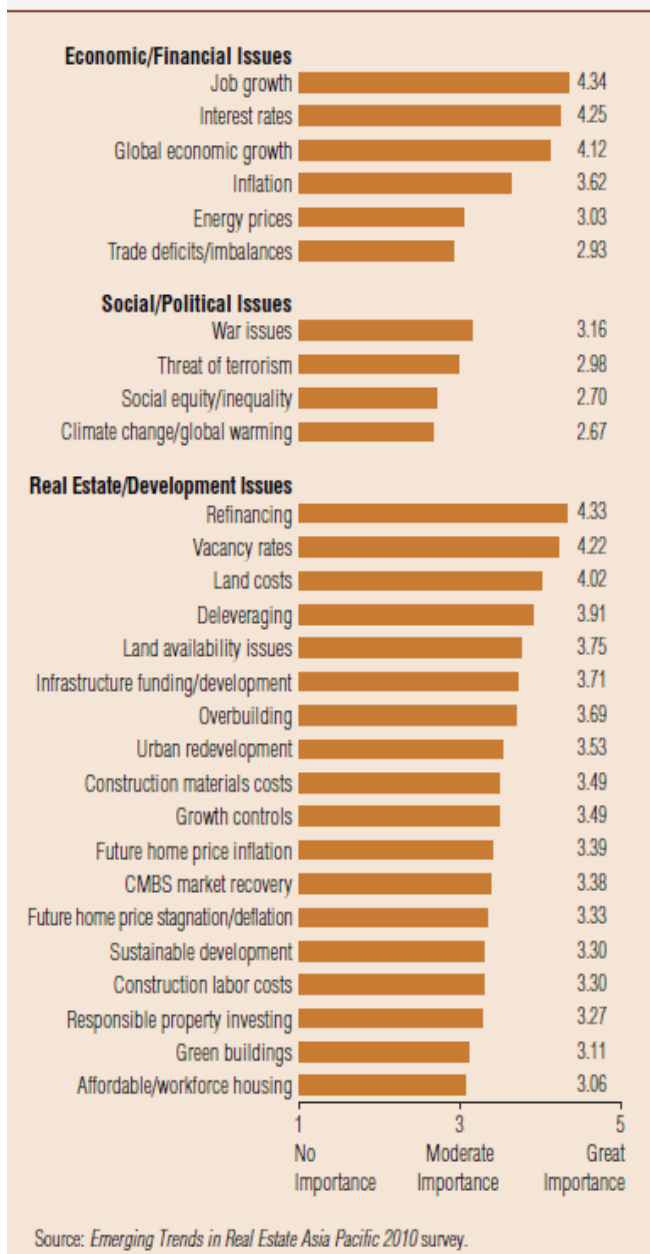


fig 6. Problems for real estate and investment development 2010

However issues like vacancy rates, growth controls, future home price inflation, and sustainable development cannot be controlled by technological intervention just by using management information systems as they are purely governed by economic externalities.

6. CONTRIBUTION OF MANAGEMENT INFORMATION SYSTEMS TO REAL ESTATE FINANCE: TAIPEI AS A CASE STUDY

Taiwan GDP growth is estimated to rebound from -1.91% YoY in 2009 to 6.14% YoY in 2010. As the global economy saw some improvement, the trading sector, including exports and imports, gained momentum and the annual growth rates were projected to recover from -20.32% and -27.48% respectively in 2009 to 24.47% and 31.51% in 2010.

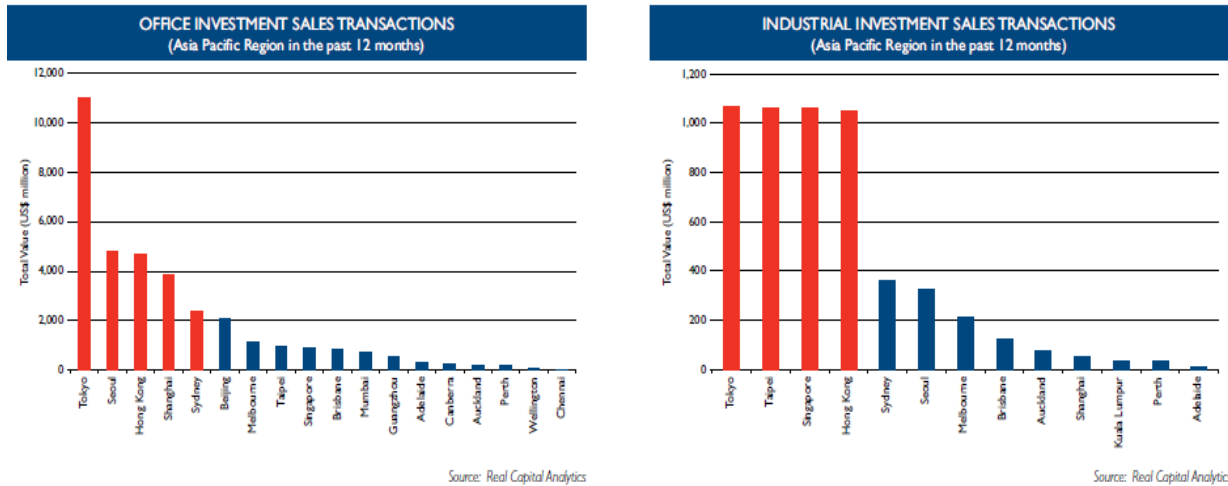


Figure 7: Official investment and industrial investment sales transactions

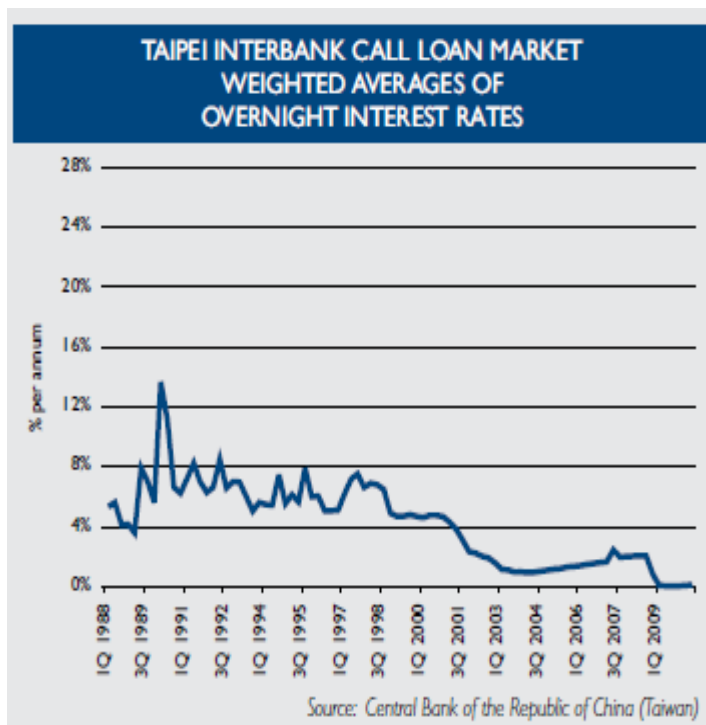
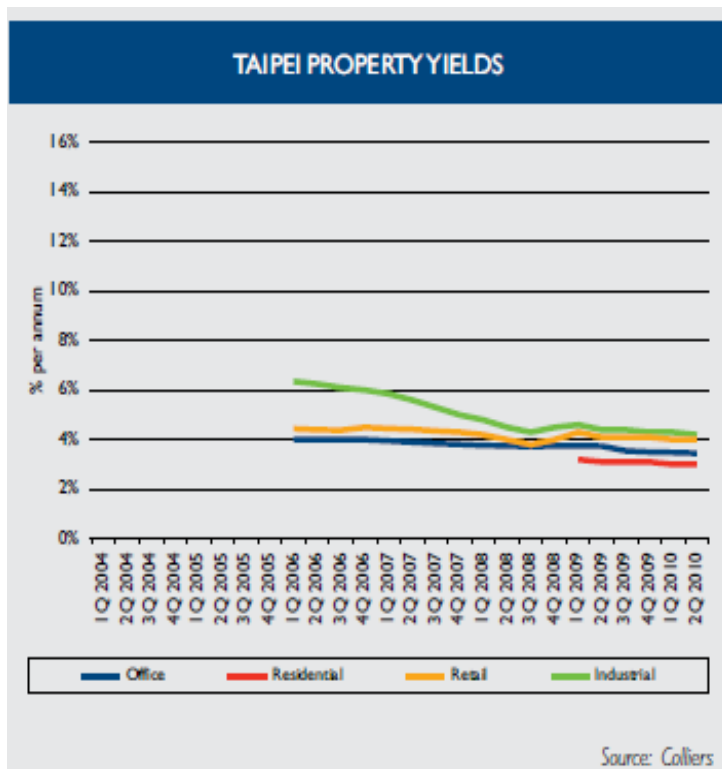


Figure 8: overnight interest rates decline

Given the scenario of a sustained low interest rate environment at least over the near- to medium-term, the expectations of further recovery of intra-regional trade and the subsequent catch up of property rentals, more investors will find it justified to enter the market in the second half of 2010. However, the key challenge to prospective buyers is always the availability of investment-grade assets for sale, particularly when the above trends become the market consensus after all. Due to the improvement of economic conditions and a low interest rate environment, there has been a gradual increase of transaction activity in the commercial real estate sector during the first half of 2010.

Real estate financing interest rates has dropped down over the years as indicated by the figure 8. This gives a fair chance for increased loan market and thereby high potential for real estate financing in Taiwan. With a surge in the investment potential

“Looking ahead, the overall investment market volume is anticipated to pickup further with stable transaction prices over the next 12 months. Taiwanese entrepreneurs with the business established overseas are anticipated to increase their investment in Taipei. Meanwhile, foreign institutions will reformulate their real estate strategies.” (Asia pacific review 2010).



It is in this context a CMIS with an integrated LIS and GIS can aid to better investment decision which can lead to higher financing in to real estate. It can be noticed that from Figure 9: Taipei property yields are in the range of 3-6% with decreasing trend in all kinds of property yields. This can be a right time for an investor to invest at a lower price under a given financing interest rate. With interest rates decreasing faster than the land valuation or the property yield, investors with proper decision making tools would be willing to invest more in to the properties either for better profitability or to gain surplus return for a given amount of bank financing.

Figure 9: Taipei property yields

Efforts were underway to create a land information system for real estate in Taiwan. A multi-scale building modeling strategy was proposed and a Web-based 3-D location query system was developed and applied to the real estate market. Overall, owner-occupiers and investors with diverse background will be the key buying forces in the market. The most-favored developments will be investment properties in the industrial office sector. Retail properties, located in the second-tier areas or individual districts with redevelopment potential under the current urban renewal policies, will be the market focus

As shown in the above figure, the investment prospects are very highly rated with a ranking of 11 and development prospects were also rated with a ranking of 9. To state in words that would mean fair prospects for both investment and development prospects. So the information systems have to be in place in order to meet up to the expectations of investor psychology. A study that effectively examined the applicability of a wide area and large scale city model

Taipei

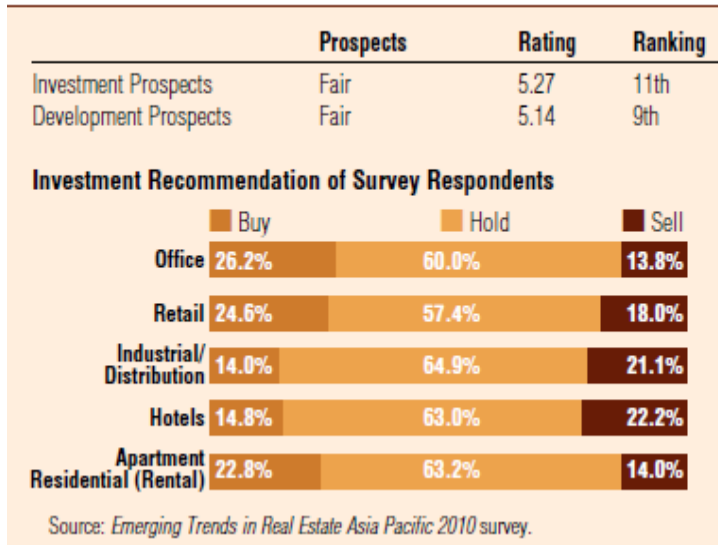


Fig 10

with photo-realism on a Web-based 3-D GIS platform was done to capture the use of GIS platform as part of the MIS systems. (Chen – Kuang, 2009). An integrated CMIS which encompasses the GIS system needs to be developed in order that the investments decisions in the real estate finance are well captured.

7. CONCLUSION

Valuers do play a critical role in understanding and interpreting market data. Future investment decisions depend on the valuations made and right valuations can lead to right investments if correlated linearly without any externalities. Further valuation profession should be aware of benefits of the property investments in a responsible way. The profession becomes more so relevant in the case of emerging economies since more than half of the land resource and therefore properties are based in these economies.

It is in this context cadastral management information systems play an important role in aiding the authorized state bodies to better land valuation. Management information system (MIS) based Land information system (LIS), offers obvious advantages for managing demographic movement, consultation, and planning processes associated with land delivery, acquisition and valuation. This can in turn aid to responsible property investments and sustainable real estate financing.

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BIOGRAPHICAL NOTES

Manohar Velpuri is a graduate from Department of Management technology and Economics, Switzerland federal institute of technology. He served as a software analyst in IBM and Athena health during the beginning of his industrial career. Later after performing as a researcher in ETH, he got involved as management information analyst in UBS

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