Sector Monitor Series

Dubai Real Estate Sector

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ملخص تنفيذي

- الهدف الرئيسي من هذه الدراسة تحليل التطورات الأخيرة وديناميكية سوق العقارات في دبي وإلقاء الضوء على توقعات السوق في الأعوام المقبلة. طورت الدراسة نموذجا لديناميكية العرض والطلب في سوق دبي للعقارات السكنية تلعب فيه أسعار العقارات دورا مهما في عملية توازن السوق. لا توجد دراسة حول سوق العقارات في دبي حاولت من قبل بحث العرض والطلب العقاري والأسعار وكيفية تفاعلها معا بمرور الزمن.

- إن محددات العرض والطلب هي تلك العوامل ضمن سوق العقارات والتي تتسبب في تحول الطلب والعرض وبالتالي تؤدي إلى تغير الأسعار. المحددات الرئيسية للطلب على العقارات هي عدد السكان، الدخل، أذواق وميول المشترين، تغير أسعار السلع الأخرى، تكلفة وتوفر التمويل، وتوقعات المشترين بشأن المستقبل. محددات العرض الرئيسية بالنسبة للعقارات هي تكاليف مدخلات الإنتاج، تكلفة التمويل، التقدم في المعرفة التكنولوجية، والتوقعات بشأن الطلب المستقبلي.

- يمكن أن يزدهر الطلب على العقارات من خلال تشجيع الناس على القدوم إلى دبي، سواء مستثمرين، رجال أعمال، موظفين، سياح، لحضور فعاليات ومؤتمرات أو بهدف العلاج والتعليم. وللقيام بذلك، هنالك حاجة لمزيد من تحرير وتبسيط القوانين والمعايير في المجالات التالية: (1) قوانين وإجراءات الهجرة والإقامة (2) قوانين وإجراءات العمل (3) قوانين وإجراءات الأعمال والتجارة (4) قوانين وإجراءات العقارات والتأجير (5) إدارة ونشر العدالة.

- توقعت خطة دبي الإستراتيجية، التي أعلنتها حكومة دبي مؤخرا، حدوث نمو سنوي حقيقي للناتج المحلي الإجمالي قدره 11% خلال الإطار الزمني للإستراتيجية 2007 - 2015. إذا قورن معدل نمو سكان دبي على المدى الطويل، والذي يعتمد على ذات التوجه في الثلاثين عاما الأخيرة، مع معدل النمو المتوقع للناتج المحلي الإجمالي حسب الإستراتيجية المذكورة، فإن ذلك يعني نموا في معدل الدخل الحقيقي للفرد قدره 4% خلال الفترة الزمنية للإستراتيجية. لذلك، يتوقع استمرار التوجه السابق لنمو دخل الفرد خلال الأعوام المقبلة. تعتبر هذه أخبارا سارة لسوق العقارات. معظم هذا الارتفاع في الدخل سوف يكون لمجموعات الدخل المرتفع والمتوسط والتي تعتبر أهدافا رئيسية لشركات تطوير العقارات. يتوقع أن يؤدي ارتفاع القدرة الشرائية لهذه المجموعات إلى زيادة الطلب على العقارات.

- يمكن تطوير الطلب على العقارات إذا تم تعزيز وفرة وتكلفة تمويل العقارات. يتوقع أن يؤدي فتح وتحرير أسواق تمويل الرهونات العقارية إلى تطوير المنافسة وبذلك يجلب المزيد من الموارد المالية للاقتراض وتشجع ابتكار المزيد من المنتجات التي تفي بالاحتياجات المختلفة للزبائن. يتوقع أن تؤدي المنافسة إلى تقليل تكلفة التمويل وتسهيل شروطه الأمر الذي يشجع المزيد من الناس على المشاركة في سوق العقارات كمستثمرين ومشترين.

- يمكن تعزيز الطلب على العقارات من خلال تطوير أذواق وميول الناس وجذبهم نحو دبي. يمكن القيام بذلك عبر الحملات الترويجية المكثفة لحكومة دبي في الدول الأخرى من خلال دائرة السياحة والتسويق التجاري والدوائر الأخرى ذات الصلة بترويج الاستثمار. يتوقع أن تؤدي الحملات الترويجية الناجحة إلى أن يميل الناس إلى دبي وبالتالي يأتون للاستثمار في قطاعها العقاري.

- نظراً إلى أن الناس تشكل توقعاتها وتبني قراراتها على السياسات الحكومية المعلنة والمتوقعة، فإن مصداقية السياسات الحكومية مهمة للغاية في تكوين هذه التوقعات. بشكل عام، فإن السياسات والمعايير الاقتصادية لحكومة دبي تتسم بالمصداقية وتحظى بثقة الجمهور. الاستثناء الوحيد لهذه المصداقية هو موضوع التضخم. في الماضي، لم يثق الناس في أرقام التضخم الرسمية التي تنشرها الحكومة لأنها لا تعكس الواقع المعاش لأنهم يشاهدونه ويعيشونه. يحتاج المشترون إلى توقع تكلفة تمويلهم بشكل صحيح بناء على أرقام التضخم التي توفرها الحكومة. لأجل خلق توقعات إيجابية يمكن أن تروج للطلب على العقارات، تحتاج الحكومة إلى تعزيز مصداقية سياساتها الاقتصادية في مجالات مثل التضخم، العمالة والنمو الاقتصادي.

- توضح نتائج النموذج أن ديناميكية السوق سوف تستغرق وقتا حتى توازن العرض والطلب. لذلك، يتوقع مرور بعض الوقت قبل أن يهدأ سوق العقارات في دبي. لا يتوقع أن يهدأ السوق قبل 5 أعوام على الأقل من الآن، بافتراض أن الحكومة لم تفعل شيئا لترويج الطلب والعرض في مجال العقارات. يتوقع أن تؤدي أي سياسات حكومية تعزز من الطلب والعرض إلى استمرار الزخم الموجود في السوق ودفعه إلى الأمام في الوقت.

- توضح نتائج النموذج أن أسعار العقارات قد ارتفعت بمعدل نمو تراكمي سنوي قدره 10% على المدى المتوسط. على المدى الطويل ارتفعت الأسعار بمعدل 4%. إذا كانت الحكومة تبحث عن معيار موضوعي لتحديد سقف للإيجارات، فإن نسبة 10% تعتبر مناسبة للمدى المتوسط. يتناسب ارتفاع أسعار العقارات على المدى الطويل والذي يبلغ 4% مع سقوف الإيجارات في بعض دول الاتحاد الأوروبي مثل هولندا. ويعني ذلك أنه عندما تصبح سوق العقارات في دبي ناضجة وتصل مرحلة الثبات، فإن الزيادة السنوية في الأسعار سوف تغطي فقط معدل التضخم إضافة إلى هامش بسيط كعائد حقيقي على العقارات.

- يوضح نموذج محاكاة السياسات بشأن التحول نحو الطلب أنه إذا رغبت الحكومة في الحفاظ على حركة سوق العقارات في دبي فإن هنالك حاجة إلى سياسة تعزز من الطلب على العقارات. إن أي سياسة تؤثر إيجابيا على عدد السكان، الدخل، تكلفة وتوفر التمويل العقاري، أذواق وميول المشترين وتوقعاتهم بشأن المستقبل سوف تساهم في زيادة الطلب على العقارات.

- يوضح نموذج محاكاة السياسات بشأن التحول نحو العرض أنه إذا رغبت الحكومة في تهدئة سوق العقارات في دبي واستقراره فإن هنالك حاجة إلى سياسة تعزز من عرض العقارات. إن أي سياسة تؤثر إيجابيا على تكاليف مدخلات الإنتاج في قطاع العقارات وتكاليف التمويل والتقدم في المعرفة التكنولوجية والتوقعات بشأن الطلب المستقبلي، سوف تساهم في زيادة المعروض من العقارات.

- يوضح نموذج محاكاة سياسات ترويج المنافسة أن سرعة توازن سوق العقارات (بمعنى الوقت الذي يتحول فيه السوق نحو التكافؤ في العرض والطلب) تعتمد على تنافسية السوق. لذلك، إذا أرادت الحكومة أن يتوازن العرض والطلب على العقارات في دبي بصورة أسرع نسبيا، فإن عليها وضع سياسات تروج للمنافسة في سوق العقارات. هذه السياسات تتمثل في مزيد من الانفتاح والتحرير لسوق العقارات، الكشف عن المعلومات، وجود تشريعات مرنة فيما يخص الأراضي والعقارات، والمزيد من تحرير أسواق العمالة ورأس المال، من ضمن مقترحات أخرى.

Executive Summary

- The primary objective of this study is to analyze the recent developments and the dynamics of Dubai real estate market and shed some light on the outlook of the market for the coming years. The study has developed a dynamic supply and demand model for Dubai residential real estate market, in which the real estate price plays an important role in the adjustment process. There is no single study on Dubai real estate market that has tried before to explicitly bring real estate supply, demand and price together and study how they interact over time.
- The determinants of demand and supply are those factors within a defined real estate market that cause demand and supply to shift and lead to price changes. The primary determinants of real estate demand are population, income, buyers' tastes and preferences, price changes of other goods, the cost and availability of financing, and the expectations of buyers about the future. The primary determinants of real estate supply are the costs of production inputs, cost of financing, advances in technological know-how, and expectations regarding future demand.
- The demand for real estate can be boosted by encouraging people to come to Dubai, whether as investors, business travellers, employees, tourists, attending events and conferences and for health and education purposes. To do this, more liberalization and simplification of laws, rules and measures are necessary in the following areas: (i) immigration and residence laws and procedures (ii) labour laws and procedures (iii) business and commercial laws and procedures (iv) real estate and tenancy laws and procedures (v) administration of courts and dispensing of justice.
- Dubai Strategic Plan (DSP), which was recently announced by Dubai government, has projected 11 per cent annual real GDP growth during the time frame of the strategy 2007-2015. If Dubai long term population growth rate of 7 per cent, which is based of its historical trend for the last 30 years, is coupled with the DSP projected growth rate of real GDP of 11 per cent, then this gives a real per capita income growth rate of 4 per cent during the years of the strategy. Therefore, the past trend of per capita income growth is expected

to be sustained into the coming years. This is good news for the real estate market. Most of this income growth accrues to the upper and middle income groups who are the primary targets of the real estate developers. Their rising purchasing power is expected to fuel the demand for real estate.

- The demand for real estate can be enhanced if the availability and cost of real estate financing are further enhanced. Further opening up and liberalization of mortgage financing markets is expected to promote competition in this market and therefore bring more financial resources for lending and encourage more product innovations that cater for the different needs of the customers. The competition is expected to render the cost of financing and its conditions affordable and therefore entice more people to be involved in the real estate market as investors and buyers.
- The demand for real estate can be promoted by developing and cementing of the tastes and preferences of the people for Dubai. This can be done through Dubai government aggressive promotional campaigns in other countries through its Department of Tourism and Commercial Marketing and investment promotion agencies. Successful promotional campaigns are expected to develop people's tastes and preferences for Dubai and consequently people will scramble for Dubai.
- The credibility of the government economic polices is extremely important because people base their expectations about the future on those policies. Generally speaking, Dubai government economic policies and measures are credible and the public have faith in them. One stark exception to this credibility is the inflation issue. In the past, people were not confident about the official inflation figures published by the government because they did not reflect realities on the grounds as they saw and experienced them daily. Buyers of real estate need to correctly anticipate their financing cost based on inflation figures provided by the government. To create positive expectations that promote demand for real estate, the government needs to boost its economic policy credibility in fronts such inflation, employment and economic growth.
- The model results show that the market dynamics will take time to adjust supply and demand. Therefore, it is expected that it will take some time before Dubai real estate market cools down. It is expected that the market will not

cool down before at least 5 years from now, assuming that the government has done nothing to promote the demand and supply of real estate. Any government policy measures that boost the demand and supply of real estate are expected to keep the market momentum on and push it further in time.

- The model results show that the real estate price has increased by cumulative annual growth rate (CAGR) of 10 per cent in the medium term. In the long term, the price has increased by CAGR of 4 per cent. If the government is looking for an objective criterion for setting a rent cap, then the 10 per cent makes a lot of sense for the medium term. The long term real estate price increase of 4 per cent is very consistent with some EU countries rent cap such as the Netherlands. This means that when Dubai real estate market becomes mature and reaches its steady state, then the annual price increase will just be covering the inflation rate plus a small margin as real return on real estate.
- The model policy simulation of a demand shift shows that if the government would like to keep the heat in Dubai real estate market then demand boosting policy measures are needed. Any policy measures that positively influence population, income, cost and availability of financing, buyers' tastes and preferences, and the expectations of buyers about the future will contribute to the increase in real estate demand.
- The model policy simulation of a supply shift shows that if the government would like to take the heat out of Dubai real estate market and stabilize it then supply boosting policy measures are needed. Any policy measures that positively influence the real estate costs of production inputs, cost of financing, advances in technological know-how, and expectations regarding future demand will contribute to the increase of real estate supply.
- The model policy simulation of promoting competition shows that the speed of adjustment in the real estate market (i.e. the time that the market will take to converge to equilibrium) depends on the competitiveness of the market. Therefore, if the government would like the supply and demand for real estate in Dubai to catch up relatively fast, then policy measures that promote competition in real estate market are needed. These policy measures are more opening up and liberalization of real estate market, information disclosure, flexible land and real estate regulations, and more liberalization of labour and capital markets, among others.

1. Introduction

1.1 Background

Since early 2000, Dubai has witnessed a phenomenal growth in residential, commercial, industrial and service real estate. This growth has been fuelled by the economic boom in the region which is mainly driven by the rising world oil prices. Rents and selling prices of all types of real estate have been skyrocketing as a result of a relatively higher demand which is not met by the supply. Consequently, huge investments by real estate developers, both government and private, have been put in place with the view of reaping the benefits of this seemingly unending boom.

The real estate sector is a dynamic and a driving force for Dubai economy during the last years. Whether it will continue to play that role in the coming years is an open question that this study will shed light on.

1.2 Objective

The primary objective of this study is to analyze the recent developments and the dynamics of Dubai real estate market and shed some light on the outlook of the market for the coming years.

1.3 Research questions

This study will answer the following research questions:

1. How different is the real estate market from other product markets?

2. What are the recent developments on the supply side of Dubai market?

3. What are the recent developments on the demand side of Dubai market?

4. How supply and demand in Dubai real estate market interact through price mechanism and how the market dynamics work themselves out?

5. What is the outlook of Dubai real estate market in the medium and long terms?

1.4 Methodology and data

Analytical and modelling approaches are used to study the dynamics of Dubai real estate market and how the forces of supply and demand interact to determine the prices in the market. The data used in the study is mainly collected from sources that are relevant and involved in Dubai real estate market such real estate developers, contractors, agents, landlords, buyers, renters and real estate research companies. In addition, data is collected from Dubai Municipality Statistics Centre and UAE Federal Ministry of Economy.

1.5 Outline of the study

The study is further divided into five sections. Section two discusses the nature of the real estate market. Section three traces the recent developments on the supply side of Dubai real estate market. Section four analyzes the recent developments on the demand side of the real estate market. Section five shows how supply and demand interacts to determine the real estate price and it sheds some light on the outlook of Dubai real estate market for the coming years. Section six is the conclusion of the study.

2. Nature of the Real Estate Market

This part of the study discusses the definition and functions of a real estate market; the special characteristics of real estate as an economic good; the factors that affect the value of real estate; and the demand and supply factors in real estate market. This part is largely based on Assessors' Handbook (Basic Appraisal, 2002). Each of these topics is discussed below.

2.1 Definition and functions of real estate market

The real estate market can be defined as the interaction of individuals who exchange real property rights for other assets, such as money. The study of a real estate market should include all factors of supply and demand that affect the price and quantity traded of the property. Real estate markets may be classified in several ways by:

(1) *Geographic area:* Real estate markets are often defined by broad geographic boundaries, because the value of most real estate, due to its immobility, is strongly influenced by local market forces. For example, one might refer to the real estate market in Dubai or the market in Dubai Business Bay Area. A neighbourhood is an example of a highly focused, geographically defined real estate market in which all properties are subject to common value influences.

(2) *Property type:* Real estate markets may also be defined by the property type traded. Real estate markets are often broadly described in terms of commercial, industrial, agricultural, or residential market segments, each representing a broad type of property. In turn, each of these broad property types may comprise several subtypes. For example, the commercial category may include office and retail properties, while the residential category includes single-family residences, apartments, condominiums, and other subtypes.

(3) *Scope of prospective market participants:* Real estate markets may also be defined by the scope of their participants. While the buyers and sellers of most houses reside in the community in which the property is located, the buyers and sellers of some properties, such as large office buildings and industrial properties, may be individual

investors or financial intermediaries from far outside the local area. Some properties trade in markets that are regional, national, or even international in scope.

The real estate market performs functions similar to those performed in other competitive markets. In particular, the real estate market:
(i) *Establishes real estate price:* Price is established in a competitive market through market transactions. Price is established through the interaction of demand and supply, and it responds to the forces affecting market demand and supply.

(ii) *Distributes existing real estate resources among potential users:* Real estate resources are distributed, or allocated, among potential users through the price mechanism. In a free, competitive market, real estate is allocated based on the ability to pay, either in the form of rent or purchase price.

(iii) *Contracts/expands real estate supply in response to changing market conditions:* In the real estate market, producers, i.e. developers, respond to increased demand, as signalled by higher purchase prices/rents, by increasing the supply of real estate through either remodelling or new construction. With a decrease in demand, the opposite occurs. The market mechanism also allows a change in the character of demand to bring about a change in the character of supply. For example, if there is increased demand, as reflected in higher prices, for homes with three bathrooms, developers will respond by constructing a greater quantity of homes with three bathrooms. Supply thus reflects the wants and desires of consumers.

(iv) *Determines land use:* in a free market, competitive bidding among buyers and sellers determines the utilization of each parcel of real estate. In general, the most productive use of a parcel of land, subject to legal and physical constraints, will prevail over other competing uses. This use, which is determined by market forces, is referred to as a property's highest and best use. In the long run, this process of land use determination at the parcel level also determines the patterns of land use over much wider areas.

2.2 Special characteristics of real estate

Real estate has special characteristics that distinguish it from other economic goods. These characteristics are namely:

(i) *Immobility:* real estate is immobile, i.e. it cannot be separated from its location. In other words, real estate cannot be moved to a better market. Its value is closely related to the current and future economic prospects of the community/neighbourhood in which it is located. The immobility of real estate means that the value of a given parcel of land is strongly affected by factors outside its boundaries. These factors include the uses that are made of neighbouring parcels; the availability and quality of off-site improvements or infrastructure (e.g., water, sewer, utility, and transportation systems); and the quality of public services, including schools and police and fire protection. All of these off-site factors exist outside of a particular parcel of real estate.

(ii) *Uniqueness:* Each parcel of real property is unique, which often makes comparison with other parcels difficult. For example, residential properties with desirable views or water front may sell for much more than otherwise comparable properties that lack such attributes, even if the properties are in close proximity. Similarly, a house on a busy street may sell for significantly less than the same model on a quiet street.

(iii) *Durability:* The durability of real property is apparent. New structures usually have a long life expectancy, and land exists in perpetuity. Thus, real property yields benefits over a long period of time.

(iv) *Large transaction size:* A characteristic of real estate related to its durability is its large average transaction size. For most people, a home is their largest investment, and investment-type properties typically require even larger outlays. The economic size of most real estate transactions creates, in most cases, a large financing requirement. Therefore, the cost and availability of financing has a strong effect on the real estate market.

(v) *Long development or production period:* From conception to completion, real estate projects often take years to complete. From a market standpoint, this means that the supply of real estate is typically slow to adjust to an increase in market demand.

An increase in demand often results in rapid price increases in the short run. Similarly, the supply of real estate is also slow to adjust to a decrease in market demand. A significant decrease in demand leads to price decreases.
Thus, the real estate market departs significantly from the ideal of a purely competitive market, largely due to the characteristics of real estate discussed above. Specifically, in the real estate market:

(i) The product is differentiated. Each real estate parcel has special physical characteristics and a unique location. This makes comparable sales and other data difficult to obtain for some types of properties.
(ii) Buyers and sellers often have unequal information. Some buyers may not be fully aware of the forces and trends which affect the value of and the full potential of a real estate parcel. Complete information about all transactions is hard to obtain, particularly for commercial and industrial properties.
(iii) There is long lead time for planning and building. This delays the supply response to an increase in demand. In a perfectly competitive market, supply and demand are rarely far out of balance. The long life of most building improvements also means that supply cannot be reduced with a decrease in demand.
(iii) The large financing requirement for most real estate means that both real estate demand and supply are significantly affected by credit conditions. The level of interest rates affects the demand for real estate and real estate value. Interest rates also affect the supply of real estate through the impact on new construction.

Table 2.2.1 below compares the characteristics of a typical perfectly competitive market and a typical real estate market. The fact that a typical real estate market is not perfectly competitive does not mean that the principles of supply and demand do not work in the real estate market. On the contrary, supply and demand are still important factors influencing the value of real estate, but the fact is that they work differently in real estate market. In a perfectly competitive market, supply and demand react quickly to changes in market conditions. However, in a real estate market supply is effectively fixed in the short run and therefore cannot respond quickly to changes in market conditions.

Table 2.2.1: Perfect market versus typical real estate market

Characteristic	Perfect market	Typical real estate market
Number of buyers and sellers	Many participants; no monopoly, oligopoly, or monopolistic competition.	Few participants; seller controls during a "seller's market" and buyer controls during a "buyer's market".
Product knowledge and market exchange	Buyers and sellers are highly knowledgeable; the exchange takes place with ease.	Buyers and sellers are not always knowledgeable; the exchange is legalistic, complex and expensive.
Standardized products	All products are alike and interchangeable; there is little difference between products of different sellers.	Each parcel of real estate is unique and separate from all others; now two are exactly alike.
Mobility	Products can be transported to capitalize on more lucrative markets.	The location is fixed; a real estate parcel cannot be moved to another more profitable location; a real estate market is local, not regional or national.
Size and frequency of purchase	The item purchased is small and relatively inexpensive; it is purchased frequently.	Real estate is purchased infrequently (rarely more than four or five times in a lifetime); a home represents the largest single investment made by the average family.
Government role	Government plays little role if any role; laissez-faire prevails.	Government plays a dominant role in encouraging or discouraging real estate development through the use of fiscal and monetary tools and by use of other controls such as zoning, environmental and health codes.
Prices	Prices are established by the smooth action of supply and demand.	Prices are influenced by the interaction of supply and demand, but this interaction is not smooth; a lack of knowledge by either the buyer or seller can distort the prices paid.

Source: Mckenzie D. and R. Betts (2006), "Essentials of Real Estate Economics", Thomson South West.

2.3 Factors affecting the value of real estate

Real estate markets at the neighbourhood, community, regional, and national levels are subject to factors that affect demand and supply. The dynamic interaction of these factors creates trends in the real estate market. These factors can be classified into four main categories:

(i) *Physical:* Physical or environmental factors are the most noticeable because they can be observed. On a macro level, these factors have played a large part in the location of cities. On a micro level, their influence is felt down to the individual parcel. Physical and environmental forces are either natural or man-made. Important natural factors that affect real property value are topography; soil; climate; natural resources such as water; scenic beauty or view; and flood or earthquake zones. Important physical factors are the size and shape of a parcel; infrastructure; and the accessibility of the parcel to other desirable destinations such schools, commercial areas, recreation areas, employment centres, etc.

(ii) *Demographic:* Demographic factors are exerted primarily through the characteristics and customs of people. Examples of these factors are general population trends; attitudes toward household formation (e.g. living alone or with others, having children, etc.); household characteristics (e.g., family size and age groupings, etc.); changes in lifestyles and living standards; neighbourhood characteristics; and attitudes of people toward government, property development, ecological issues, and education.

(3) *Economic:* Economic factors strongly affect city growth or decline and therefore property values. Examples of demand factors are trends in employment and income; the availability of financing; the level of interest rates; and trends in a community's economic base (e.g. industrial expansion or contraction). Examples of economic factors that affect supply are the availability of vacant and improved properties; rental and price patterns of existing properties; construction planned or in progress; and construction costs.

(4) *Governmental:* These broadly include political decisions made by all levels of government and by the courts. The demand for and supply of real estate, and hence its value, are strongly influenced by governmental actions and controls. Governmental influences include zoning and building codes; development regulations; environmental regulation; police, fire, and health protection; the construction of physical infrastructure (e.g., utilities and transportation networks); and public school systems. Specific legislation, such as rent control, may influence real estate markets. Federal monetary policy and federal and emirate fiscal policies also influence real estate markets.

2.4 Demand and supply factors in real estate markets

The determinants of demand and supply are those factors within a defined real estate market that cause demand and supply to shift and lead to price changes. The primary determinants of real estate demand are population, income, buyers' tastes and preferences, price changes of other goods, the cost and availability of financing, and the expectations of buyers about the future. The major three determinants of demand are population, income, and availability of financing:

(i) *Population:* It is important not only in terms of its size, but also in terms of its demographics such as age distribution, educational status, and size of household. Equally important is the fact that population moves or migrates. Changes in population are most often tied to employment opportunities. Increases or decreases in population strongly influence real estate values.

(ii) *Income:* A growing level of income increases the demand for real estate, while a declining level of income decreases demand. Income growth creates business expansion and increased demand for commercial real estate. An increase in household income increases the demand for residential real estate.

(iii) *Availability of financing:* Since most real estate transactions require a significant level of financing, demand for real estate is strongly affected by the cost and availability of financing. A significant increase in borrowing costs may slow down demand. Because real estate markets are largely local, changes in population and

income are often more influential at the local or regional level than at the national level. When income and population are increasing in a community or region, the demand for real estate increases and values also tend to increase.

The primary determinants of real estate supply are the costs of production inputs, cost of financing, advances in technological know-how, and expectations regarding future demand:

(i) *Costs of production inputs:* Increases in the cost of production inputs reduce the quantity of real estate supplied at a given price. Real estate production inputs include land, labour and materials. If land is not available at a price that permits a profit, then development cannot occur. Moreover, land is not useful for development unless a suitable infrastructure is in place.

(ii) *Cost of financing:* The availability and cost of financing is a significant determinant of supply as well as of demand.

(iii) *Technological know-how:* Advances in technological know-how affects the cost of production. Advances which decrease costs tend to increase the quantity supplied.

(iv) *Expectations:* The expectation of developers regarding future demand is the single most important determinant of supply. If developers are optimistic about future demand, then the quantity supplied tends to increase and vice versa. Developer expectations typically derive from forecasts regarding national, regional, and local economic activity.

In part 3 and part 4 that follow, the factors of supply and demand are discussed in the case of Dubai real estate market in recent years.

3. Supply of Dubai Real Estate

In Dubai, there are two real estate providers and these are namely the government and the private sector. At first, the government was the sole provider of the real estate (development), but through the time it passed this role to the private sector. At the moment, the private sector is carrying out huge real estate projects. Part of these projects was completed and the other part is planned for the short, medium and long terms.

3.1 Government

The buildings under the control of Dubai Municipality are divided into three types. These are namely villas and residential complexes; multi-storey commercial buildings; and industrial recreational and service buildings. The total number of completed buildings in Dubai increased by 16 per cent during the period 2000 – 2006 from 1,917 buildings in 2000 to 2,222 buildings in 2006. Villas and residential complexes increased by 30.4 per cent during the period 2000-2006, but they decreased by 6 per cent in 2006 from the previous year. The number of completed industrial, recreational and services buildings declined by 16 per cent during the period 2000-2006. However, they increased by 6 per cent in 2006 as compared to 2005. On the other hand, the completed multi–storey commercial buildings increased by 15.5 per cent during the period 2000-2006. Please refer to table 3.11.

Table 3.1.1: Completed buildings in Dubai, 2000-2006

Year	Villas & Residential Complexes	Multi-storey Commercial Buildings	Industrial, Recreational, & Services Buildings	Total
2000	1,098	330	489	1,917
2001	1,672	355	418	2,445
2002	1,558	412	289	2,259
2003	1,112	423	348	1,883
2004	1,436	393	290	2,119
2005	1,529	337	386	2,252
2006	1,432	381	409	2,222

Source: Dubai Municipality

In 2006, the total value of building projects under the control of Dubai Municipality amounted to AED 11.2 billion. 22.2 per cent of this were used for the residential purposes (Villas and Residential complexes), 43.2 per cent were used for Multi–storey commercial buildings, and 34.6 per cent were used for industrial recreational & service buildings. Table 3.1.2 below shows the number of the buildings under the control of Dubai Municipality and still under construction. The number increased by 11 per cent in 2006.

In 2006, the total number of completed flats within the buildings projects, under the control of Dubai Municipality, was 14,889. While the flats under construction were 175,638.

Table 3.1.2: Under Construction Buildings in Dubai, 2005-2006

Year	Villas & Residential Complexes	Multi-storey Commercial Buildings	Industrial, Recreational, & Services Buildings	Total
2005	15,386	3,079	2,851	21,316
2006	17,342	4,270	2,017	23,629

Source: Dubai Municipality

According to General Population Census, Housing and Establishment 2005, the total number of housing units in Dubai totaled 205,518 units. 69 per cent were flats, 21 per cent were villas, 8 per cent were Arabic houses, and 2 per cent were other types.

Table: 3.1.3: Housing units in Dubai by type

Type of housing unit	1993	1995	2000	2005
Flat	60,099	68,384	95,542	141,205
Villa*	15,033	16,200	21,290	43,424
Arabic house	14,959	15,181	13,455	15,930
Popular house**	3,959	4,002	4,397	0
Others	11,304	7,955	10,679	4,959
Total	105,354	111,722	145,363	205,518

Source: Statistic Center of Dubai

* includes villa supplements ** includes popular house supplements

It should be noted that the government has direct involvement in initiating real estate developments. It is particularly active in the case of low income housing. For instance, the government has initiated a housing programme[1] for the UAE nationals, which involves AED 8 billion to be spent in the next four years. Land will be granted and a loan worth US$200,000 would be given at minimal interest for tenure of 25 years.

3.2 Private sector

The government of Dubai has established partly privately owned real estate companies. The major companies (developers) are Emaar, Nakheel and Dubai Properties. These developers are the major beneficiaries of the government's decision to pass its responsibilities within the real estate sector. These companies receive land from the government at subsidized rates.

The changing behavior of the tenants and the businesses in renting an apartment to buy it has pushed the developers to use the pre-selling methods in providing new properties. This behavior put the developers into pressure to provide more residential units in order to meet the increase in the demand side. The availability of the property selling and buying finance in addition to the property new law that allow expatriates to own properties in Dubai has resulted in a dramatic increase in residential property both supply and demand especially in the construction of high end properties. On the other hand, this situation causes the problem of the low–end apartments which affected a wide range of population. The high land prices and construction material prices are the major reasons behind the shortage of the low end real estate developments.

Most of the major projects had been initiated during the last two years, which means that there are a number of large projects to be delivered in the medium and long terms.

[1] UAE Real Estate Sector, Global investment House, June 2006

3.4 Residential units supply in Dubai

The primary determinants of real estate supply are the costs of production inputs, cost of financing, advances in technological know-how, and expectations regarding future demand.

Increases in the cost of production inputs reduce the quantity of real estate supplied at a given price. Real estate production inputs include land, labour and materials. If land is not available at a price that permits a profit, then development cannot occur. Moreover, land is not useful for development unless a suitable infrastructure is in place.

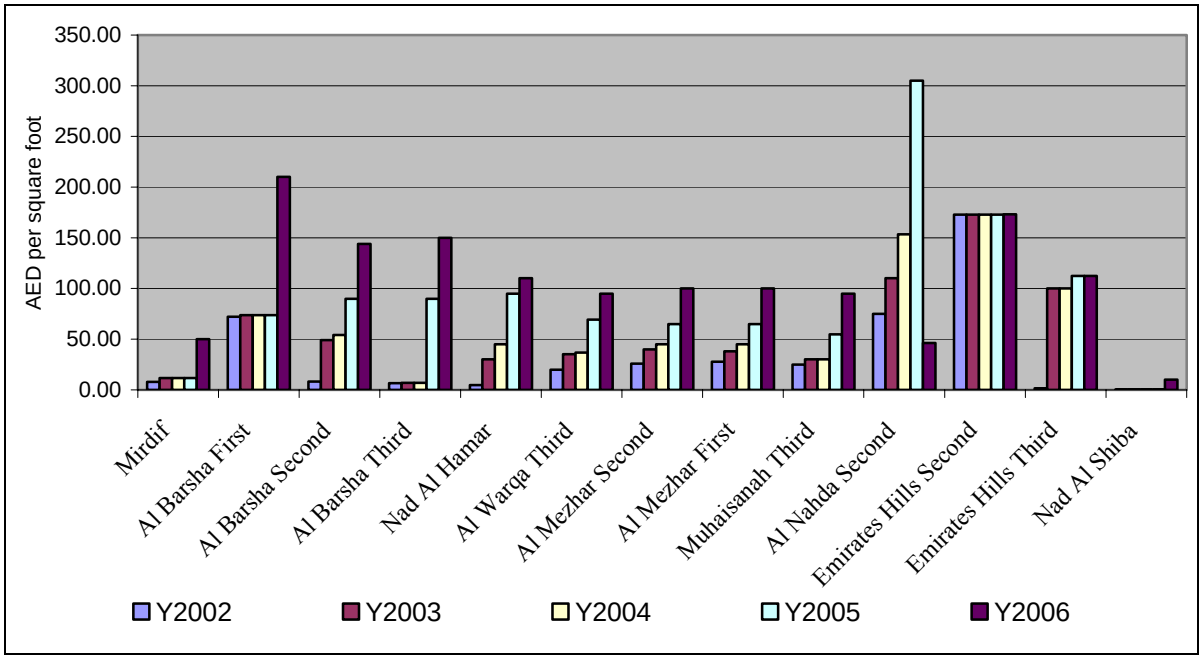
3.5 Land prices

Land prices are one of the major factors behind the increase in the cost of real estate developments in Dubai beside the cost of the construction materials and the machinery costs. There are many reasons for the land prices to increase such as the infrastructure provided and the land location.

According to data released by Dubai Land Department, there are two prices for land per area. That is, the lower and higher prices. The lower price indicates the lowest price a land been sold at in a specific area. The higher price indicates the highest price a land has been sold at in the same area, keeping in mind the differences in the features of each land.

During the period 2002 – 2006, the higher price seems to remain unchanged and no changes had happened for the top areas that witnessed more sales transactions. On the other hand, the lower price had increased almost in all top active areas except Alnahda Second Area (refer to figure 3.5.1).

Figure 3.5.1: Land lower price by area, 2002- 2006



Source: Dubai Land Department

During the period 2002 – 2006, the land lower price had witnessed a huge increase in a wide range of different areas in Dubai. Table 3.5.2 below shows the cumulative annual growth rate (CAGR) of price per area.

Table 3.5.2: CAGR of land lower price by area during 2002-2006

Area	**CAGR**
Emirates Hills Third	196.79%
Nad Al Shiba	151.49%
Nad Al Hamar	120.30%
Al Barsha Third	117.77%
Al Barsha Second	104.40%
Mirdif	58.11%
Al Warqa Third	47.65%
Al Mezhar Second	40.04%
Muhaisanah Third	39.62%
Al Mezhar First	37.47%
Al Barsha First	30.68%
Emirates Hills Second	0.04%
Al Nahda Second	-11.46%

Source: Dubai Land Department

It is clear from the above table that the land price in the Emirates Hills Third area increased by a CAGR of 196.79 per cent during the period 2002-2006. It is followed by Nad Al Shiba with a price increase of a CAGR of 151.49 per cent. Then Nad Al Hamer with a CAGR of 120.30 per cent.

Al Nahda Second area is the only decreasing area in the lower price for the year 2006. However, it witnessed and increases during the period 2002-2005 with a CAGR of 36 per cent, but it dropped in 2006 by 85 per cent.

3.6 Construction materials

During the last few years, most of the construction materials have witnessed great fluctuations in production, consumption and mostly its price. Such price fluctuations had affected a wide range of businesses such as the contractors, and real estate developers.

The major problematic construction materials are steel, cement, aluminum and wood. Through January to August 2006, stainless steel HR coils 316 prices increased by 44 per cent from US$ 4,000 in January to US$ 5,750 in August.

Cement price increased during the period 2002 – 2003 by 30 per cent while it increased by 60 per cent during 2003 – 2004, however it decreased in 2005 but again increased in 2006.

According to construction materials traders in Dubai, wood price increased by 23 per cent in August 2006 over the average price in 2005.

3.7 Cost of financing

The availability and cost of financing is a significant determinant of supply. Real estate financing has developed in the UAE over the past few years. It plays a major role in supporting real estate developments, which comprises the construction of commercial and residential multi-storey buildings. Amlak was an early leader,

followed by Tamweel. Commercial banks also entered the market, and all these sources of finance offer their customers a wide variety of innovative finance products that are compliant with Sharia, i.e. Islamic law.
Competition in the financial market had brought new facilities to the real estate developers in terms of low interest rates, long payments periods and other payments facilities.

3.8 Technology and innovation

Advances in building technological know-how affect the cost of construction. Advances which reduce construction costs tend to increase the quantity supplied of finished buildings. The evolution of the new technology in construction and that of information technology are changing dramatically the way the real estate developers do business. It helps in providing quality buildings with low cost and improves the sales. Some of the developers mentioned that they are seeking quality substitutes to the major problematic construction raw materials, such as cement and steel, in order to reduce their cost.

3.9 Expectations

The expectations of developers regarding future demand for real estate is the single most important determinant of supply. If developers are optimistic about future demand, then the quantity supplied tends to increase and vice versa. Developer expectations typically derive from forecasts regarding national, regional, and local economic activity.

According to the comprehensive statistical surveys of Dubai in the years 1993 and 2000 and the Ministry of Economy census of the year 2005 and Dubai general census of population and housing in 2005, the total number of housing units increased by 41 per cent during the period 2000-2005; from 145.4 thousand units to 205.5 thousand units indicating the growth of the residential properties in Dubai. The number of villas

increased by almost 100 per cent, while the flats increased by 48 per cent during the same period.

The decision to allow non-Gulf citizens to purchase freehold property in certain areas has also played an important role in increasing the demand and supply too. By allowing freehold ownership, Dubai government hopes to attract more skilled professionals to stay in the Emirate. The Emirate is an attractive and competitive place for a second holiday home, particularly for the Europeans (i.e. high income people). Table 3.9.1 below shows the planned projects under construction that will be completed during the coming five years. During this period, around 131 thousand units will be supplied by the major market players while in the long run there are a number projects that will be concluded till the year 2020 and these projects will provide a large number of units (for example, Dubai land and the water front projects). But some of these housing units may not be delivered on time due to different factors and this may affect the supply.

Table 3.9.1: Residential units planned by the major developers in Dubai, 2006

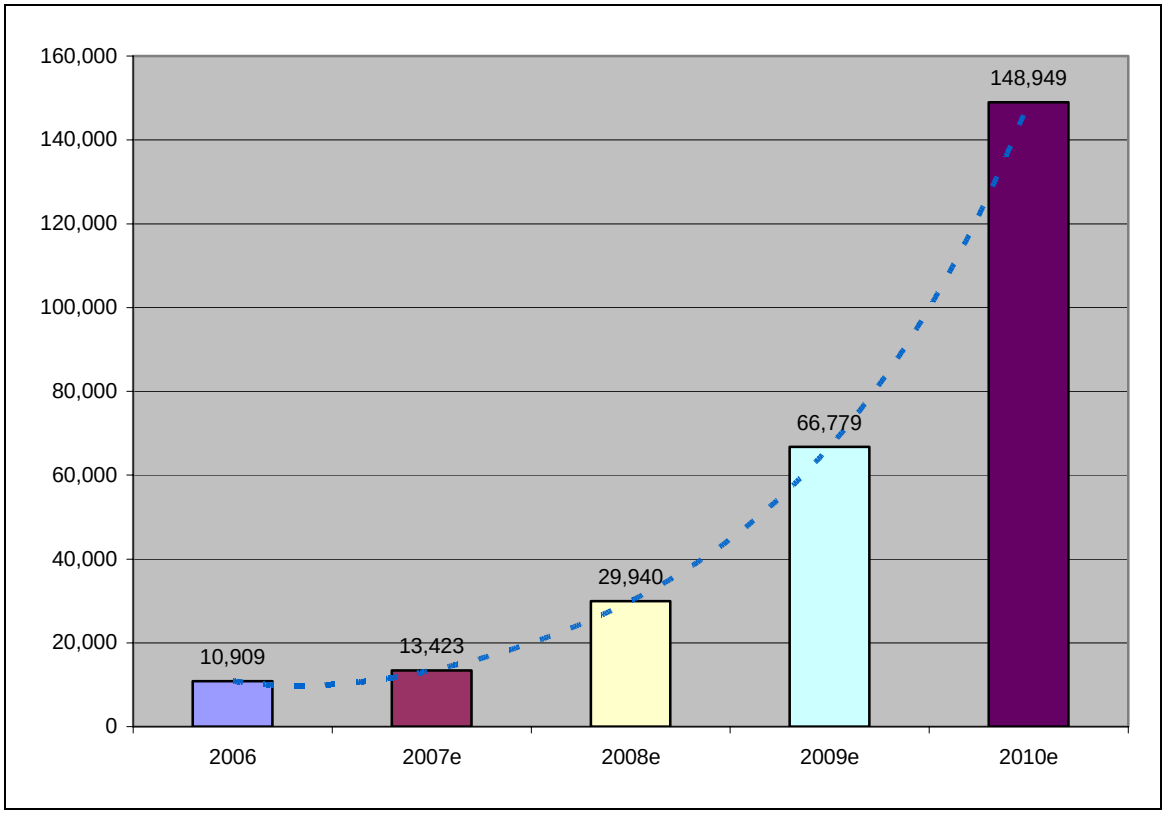
Developer	**Units number**	**Expected supply**	**Project name**
Dubai properties	3400	2008	Dubai land phase1
Emaar	14,000	2008	Dubai marina
Nakheel	4,900	2006	Jumeirah palm
Nakheel	8,000	2009	Palm Deira
Nakheel	6,400	2008	Palm Jebel Ali
Nakheel	15,000	2006	Jumeirah island
Nakheel	5,000	2006	Jumeirah lake towers
Nakheel	21,000	2006	International city
Nakheel	25,412	2006	Gardens of discovery
Nakheel	6,067	2006	Jumeirah village
Union properties	840	2007	Green community west
Futtaim group	21,000	2012	Festival city
Total	131,019		

Source: Companies websites

Most of the new residential units will enter the market in the year 2008, and around 75 per cent of these units will be provided by the large developers, primarily Nakheel, Emaar and Dubai Properties, so it is expected to be delivered on time.

Figure 3.9.2 below shows the annual flow of housing units that will be delivered to the market during the period 2006 – 2010. It has been forecasted based on the number of projects announced by the major developers. During the period 2006-2010, the flow forecast of Dubai housing units is expected to reach 270 thousand units, assuming that the announced projects will be delivered on time and no new projects will be developed.

Figure 3.9.2: Housing units supply flow forecast, 2006 – 2010



Source: DCCI market forecasts; EFG-Hermes, Dubai Real Estate sector, 2006

Table 3.9.3: Major new projects in Dubai, 2007 (value in billion dollars)

Project Name	Value
Limitless - Downtown Jebel Ali	$1,350
Al-Murjan Real Estate - Community Development	$4,000
Government of UAE - Inter-Emirates Rail Network	$2,500
Emirates German Group - Dolphin City	$1,700
Investment Dar/ Efad Holding - Oqyana	$3,500
Al-Hanoo Holding Company - Nujoom Islands	$5,000
IFA - Kingdom of Sheba (Palm Jumeirah)	$1,000
Dubai Properties - Business Bay	$5,500
Bait al-Khidmat - Infrastructure Works (Al-Reem Island)	$4,000
Benaa Developments - Golf City (Dubai land)	$1,800
Mizin (Tatweer) - Arjan	$5,000
RTA - Dubai Metro System (Blue Line)	$1,000
RTA - Dubai Metro System (Purple Line)	$1,000
Al Sharq Group - Aqua Dunya (Dubai land)	$1,900
High Rise Real Estate - Emirates Flag	$1,900
Tatweer - Bawadi (Dubai land)	$10,900
Mizin - Majan(Dubai land)	$4,100
R Holdings - Emirates City	$4,000
Elite Holding - AutoPolis Scheme Project	$2,000
Dubai Properties - Tijara Town (Dubai land)	$1,635
Emirates Sunland Group - White Bay	$2,200
Fortune Group - Burj al-Alam Tower (Business Bay)	$1,100
Al-Hashemi Group/ Al-Salem Group - Dubai Mountain City	$3,400
Tanmiyat - Living Legends & Trade Legends (Dubai land)	$2,000
Pearl Properties/ Aristocrate Holdings - The Palisades(Dubai Investments Park)	$3,500
Others	$23,477
Total projects in Dubai	99,462

Source: MEED project database, available at www.meedprojects.com

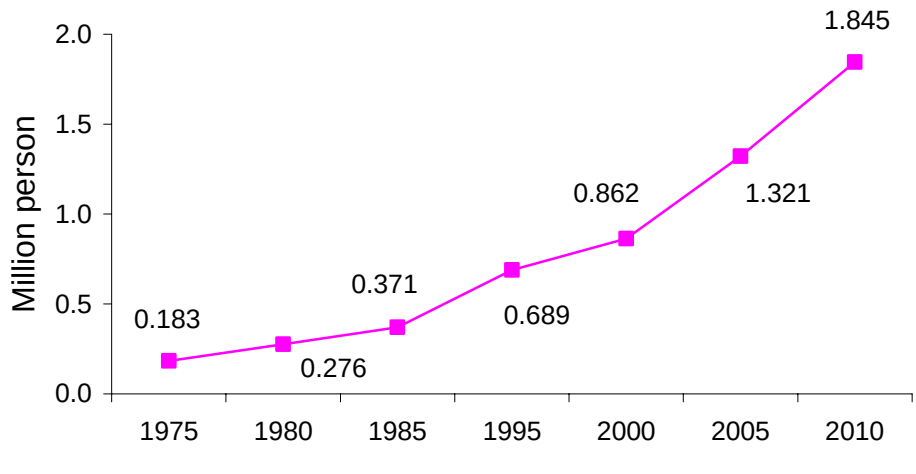
4. Demand for Dubai Real Estate

As we have seen in part 2, the primary determinants of real estate demand are population, income, the cost and availability of financing, buyers' tastes and preferences, and the expectations of buyers about the future. Each of these factors is discussed below in the case of Dubai.

4.1 Population

For the last 30 years (1975-2005), the population of Dubai has grown by a cumulative annual growth rate (CAGR) of 6.9 per cent. This rate is calculated using actual population census data that was gathered during this period of time. This population growth rate is used to extrapolate from the population size in 2005, which is 1.321 million, into the near future. Thus in 2006, Dubai population is estimated to be 1.413 million, using this procedure. By the year 2010, Dubai population is projected to be 1.845 million, given Dubai historical growth rate of the population. Please refer to figure 4.1.1 below.

Figure 4.1.1: Poulation of Dubai during 1975-2010 (in million person)



Source: Based on historical data from Dubai population censuses and authors' projection

Therefore, Dubai population is expected to increase by 0.432 million people between 2006 and 2010. This gives an annual increase of 0.108 million during a period of 4 years. The later figure can be used to calculate the number of new residential units that will be needed to accommodate the annual increase in Dubai population. In other

words, the additional demand for residential units. If Dubai is benchmarked against EU countries such as Austria and Belgium, then a residential unit accommodates 2.5 persons. The number of persons per unit is obtained by dividing the number of occupants by the number of occupied residential units[2]. Then 0.108 million people will need 43,233 additional residential units annually to accommodate them. EGF-Hermes estimate is very close to this one, which is some where in the range of 40,000 to 50,000 housing units annually (EFG-Hermes, 2006).

It is possible to further promote the demand for real estate by encouraging more population to come to Dubai, whether as investors, business travellers, employees, tourists, attending events and conferences and for health and education purposes. To do this, more liberalization and simplification of laws, rules and measures are necessary in the following areas: (i) immigration and residence laws and procedures (ii) labour laws and procedures (iii) business and commercial laws and procedures (iv) real estate and tenancy laws and procedures (v) administration of courts and dispensing of justice. The implementation of these measures is expected to sustain the impressive historical growth of Dubai population and may even increase it further if the people become confident of the system and its rules of the game.

4.2 Income

Income is an important determinant of real estate demand. Table 4.2.1 below shows Dubai gross domestic product (GDP), population and per capita income in real terms. GDP is measured in million AED (in constant prices of 2000) and population is measured in million persons. During the period 2000-2006, GDP grew by cumulative annual growth rate (CAGR) of 13 per cent in real terms while population grew by CAGR of 9 per cent. Therefore, real per capita income grew by CAGR of 4 per cent during this period. This is an impressive income growth that has positive implications for real estate demand in Dubai. Similar trends in real per capita income growth are found for UAE and other GCC countries.

[2]UN Human Settlements Statistics
http://unstats.un.org/unsd/demographic/sconcerns/housing/comp2001/table03.pdf

Table 4.2.1: GDP, population and per capita GDP (constant prices)

	2000	2001	2002	2003	2004	2005
GDP	62,335	65,669	77,091	88,766	104,772	116,879
Population	0.862	0.910	0.961	1.014	1.071	1.321
GDP per capita	72,282	72,137	80,223	87,508	97,847	88,447

Source: Dubai Economic Department

For the future, Dubai Strategic Plan (DSP), which was recently announced by Dubai government, has projected 11 per cent annual real GDP growth during the time frame of the strategy 2007-2015. If Dubai long term population growth rate of 7 per cent, which is based on its historical trend for the last 30 years, is coupled with the DSP projected growth rate of real GDP of 11 per cent, then this gives a real per capita income growth rate of 4 per cent during the years of the strategy. Therefore, the past trend of per capita income growth is expected to be sustained into the coming years. This is good news for the real estate market. Most of this income growth accrues to the upper and middle income groups who are the primary targets of the real estate developers. Their rising purchasing power is expected to fuel the demand for real estate.

4.3 Cost and availability of financing

There are two types of players in Dubai real estate financing market. First, there is the group of the specialized real estate mortgage financing companies such as Amlak and Tamweel who offer a number of real estate financing products. Second, there is the group of commercial banks who are also engaged in mortgage financing by offering different mortgage financing products and these are about 10 to 12 banks according to the estimate of some observers.

These two groups of real estate mortgage providers have been offering a variety of mortgage products that strive to meet the needs of the different customers. The mortgage financing options are available for both UAE nationals and residents with loan maturity period up to 25 years and loan-to-value mortgage that can be up to 100 per cent by some real estate financing companies. The mortgages rates are directly or indirectly linked to the US interest rate due to the fixed beg of the UAE Dirham to the US Dollar and therefore UAE monetary policy follows closely that of the US. During the last years, the US interest rate has been relatively low and consequently the cost of

mortgage financing. Aided by the availability of mortgage financing and its reasonable cost, the demand for real estate has been given a push.

Table 4.3.1 below shows the real estate mortgage loans extended by both the UAE national banks and foreign banks operating in UAE during recent years. During the period December 2004 and December 2005, the real estate mortgage loans for all banks increased by a cumulative monthly growth rate (CMGR) of 4.5 per cent. And it increased by CMGR of 5.5 per cent during the period September 2005 and September 2006. This is a clear indication of the availability of real estate financing for those who are contemplating buying real estate in Dubai.

Table 4.3.1: Real estate mortgage loans (million AED)

	2004	2005		2006		
	December	September	December	July	August	September
National banks [(a)]	9,711	13,845	15,388	23,627	23,955	24,194
Foreign banks	893	1,371	1,836	2,487	2,647	3,113
All banks	10,604	15,216	17,224	26,114	26,602	27,307

Source: UAE Central Bank "Statistical Bulletin", Quarterly July-September 2006.
(a) Excluding overseas branches of national banks

Table 4.3.2 below gives the unweighted average interest rates of banks on personal and business loans. Figures from the literature on Dubai real estate financing (EFG-Hermes 2006, Colliers 2006) indicate that the real estate loans belong to the business category rather than the personal one. Figures from the literature show that commercial banks charge a rate in the range of 7 to 8 per cent while mortgage financing companies (such as Amlak and Tamweel) charge a rate in the range of 8 to 9 per cent, depending on the loan tenure and on whether the rate is floating or fixed. From table 4.3.2, it is obvious that the cost of real estate financing is cheaper relative to personal consumption loans. This is because it is collateralized by the property. This relatively low cost of financing has fuelled the demand for real estate in Dubai.

Table 4.3.2: Average interest rates on personal and business loans (%)

	2005	April 2006	May 2006	June 2006	July 2006	August. 2006	September 2006
Personal	11.44	11.81	11.55	11.55	11.78	11.82	11.66
Business	7.19	8.37	8.03	7.96	7.98	8.00	8.08

Source: UAE Central Bank "Statistical Bulletin", Quarterly July-September 2006.

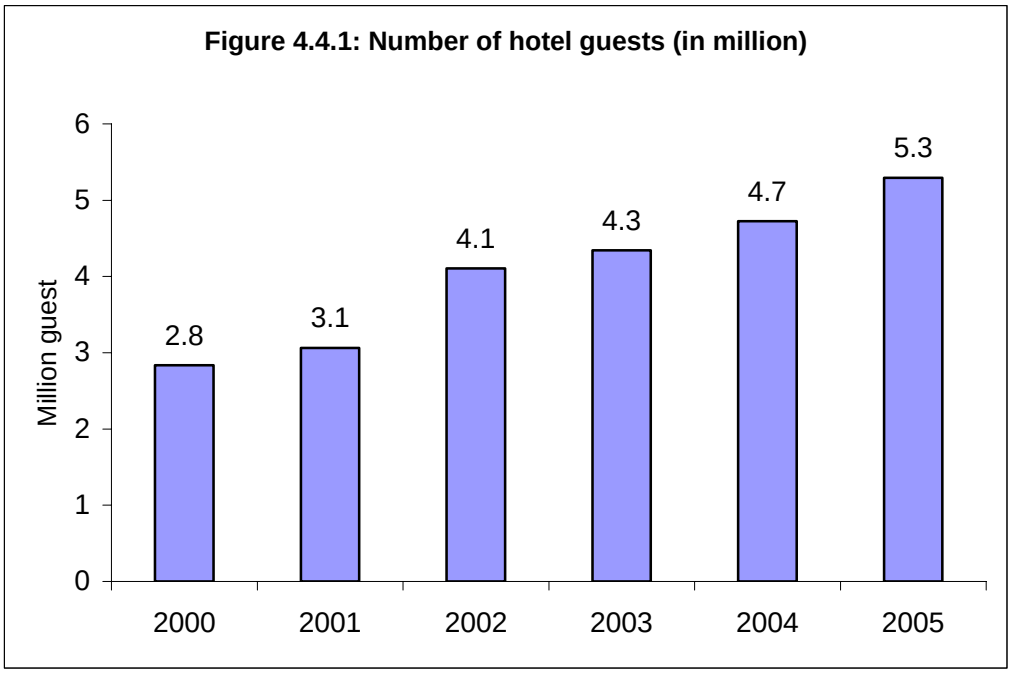
The demand for real estate can be further promoted if the availability and cost of real estate financing are further enhanced. Further opening up and liberalization of

mortgage financing markets is expected to promote competition in this market and therefore bring more financial resources for lending and encourage more product innovations that cater for the different needs of the customers. The competition is expected to render the cost of financing and its conditions affordable and therefore entice more people to be involved in the real estate market as investors and/or buyers.

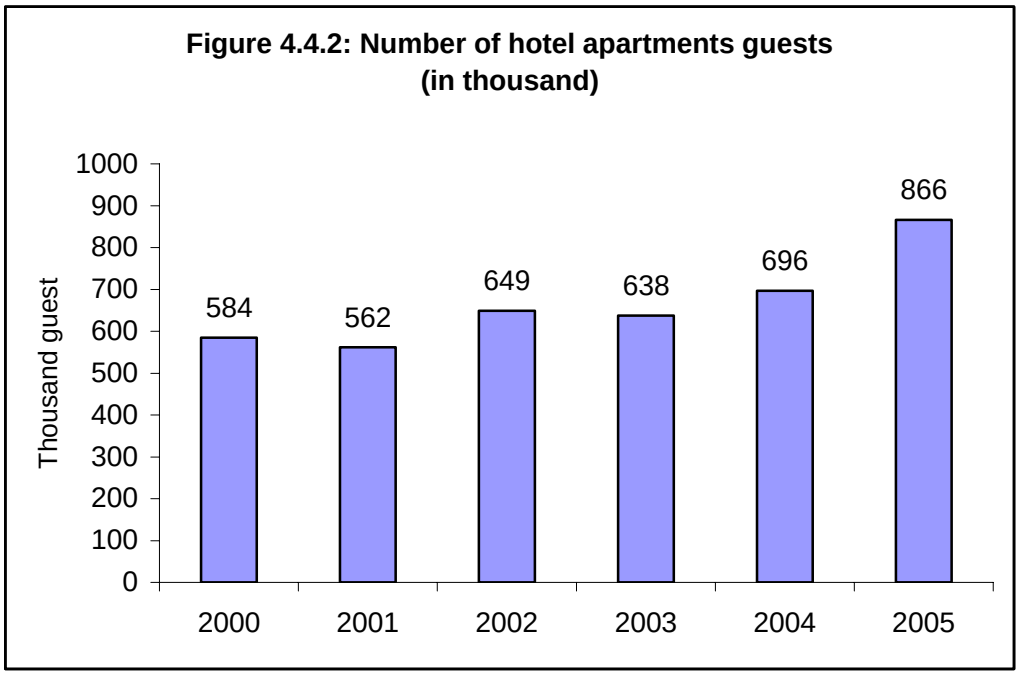
4.4 Tastes and preferences

The buyers' tastes and preferences for buying a house in Dubai is obvious from the number of the people who live in Dubai, being UAE nationals, GCC nationals, other Arab nationals, Asians, Africans, Europeans, Americans, Australians, etc. A city with more than 100 nationalities is a clear indication that people of different nationalities and backgrounds prefer to work and live in Dubai and have taste for Dubai life. This is in addition to those who just come for doing business, tourism, conferences, sports events, etc. Therefore, people's preference for Dubai and its taste of life has been growing over years and has been reinforced and strengthened every day by the rapid economic growth of the Emirate and the opportunities that it provides.

If the number of Dubai hotel guests and hotel apartments guests is taken as an indicator of preference for Dubai life, then figures 4.4.1 and 4.4.2 show a clear preference for Dubai over time. The number of Dubai hotel guests increased by CAGR of 13 per cent during the period 2000-2005 while the number of hotel apartments guests increased by CAGR of 8 per cent during the same period. These guests are coming from UAE, GCC countries, other Arab countries, Asian countries, African countries, European countries, American countries and Oceanian countries. In other words, they are coming from all over the world.



Source: "Statistical Yearbook: Emirate of Dubai", October 2005 and November 2006



Source: "Statistical Yearbook: Emirate of Dubai", October 2005 and November 2006

The demand for real estate can further be promoted by further developing and cementing the tastes and preferences of the people for Dubai. This can be done through Dubai government aggressive promotional campaigns in other countries through its Department of Tourism and Commercial Marketing and investment promotion agencies. Successful promotional campaigns are expected to develop

people's tastes and preferences for Dubai and the consequently the scramble for Dubai.

5.5 Expectations about the future

The buyers' expectations are an important determinant of demand. These expectations are about real estate supply, laws and regulations, financing cost and conditions, inflation, employment and economic policies, etc. If buyers are optimistic about the future supply of real estate, then their demand tends to decrease at the present in the hope that they may get better bargains tomorrow when the real estate market is awash with supply. If they are pessimistic about the future of supply, then their demand tends to increase at the present thinking that what they get now are better bargains and fearing that they may not get them tomorrow when the real estate market is short in supply. It seems that Dubai real estate market has been operating under the later expectations scenario where people have the feeling that things will be running out tomorrow and therefore have the urgency of buying now or never.

The same applies to the laws and regulations and financing cost and conditions of real estate. Whenever people are optimistic about the future of the regulations and financing cost they will wait and whenever they are pessimistic about them they will act now.

On the other hand, the opposite is true for the buyers' expectations about future inflation, employment and economic policies. If they are optimistic about the future of inflation, employment and economic policies they will act now and if they are pessimistic about them they will wait and delay their decisions till tomorrow. Therefore, the credibility of the government economic polices is extremely important because people base their expectations and decisions on those policies.

Generally speaking, Dubai government economic policies and measures are credible and the public have faith in them. One exception to this credibility is the inflation issue. In the past, people were mistrusting the official inflation figures published by the government because they did not reflect realities on the grounds as they saw and experienced them daily. The officially published inflation figures were far from realities and seriously underestimating the true inflation level simply because they were not based on real data but rather based on wishful thinking and uneducated guesses. People are interested in knowing the true inflation level because they need to

plan their income and spending. In the case of real estate buyers, they need to correctly anticipate their financing cost based on inflation figures provided by the government. Recognizing this need, DCCI has recently prepared a consumer price index (CPI) for Dubai based on real field data and internationally accepted methodology.

To create positive expectations which further promote demand for real estate, the government needs to boost its economic policy credibility in fronts such inflation, employment and economic growth.

5.6 Real estate market and changes in demand

In the short run, changes in the current values of real estate are a result of changes in demand since supply is effectively fixed in the short run. An increase in demand will reduce existing vacancies in real estate market. This reduction in vacancies will be followed by an increase in prices and rents as more people bid for the fixed supply of real estate. As prices and rents go up, a point is reached at which real estate developers (i.e. investors) and contractors (i.e. builders) are motivated by the profit potential to start new construction projects. As construction starts, the supply of real estate increases gradually. Eventually, the increase in supply will overtake the increase in demand and vacancies start to appear in the real estate market. As vacancies rise, prices and rents start to fall gradually. Price and rent declines may not be apparent at the beginning but instead they show up as rent concessions and favourable seller-aided financing. With falling prices and rents, profits are squeezed and/or disappear due to accelerating construction cost and falling real estate prices and rents. With falling prices and rents, buyers and renters can now obtain good quality and spacious space at no more cost and this may absorb the existing vacancies. Otherwise, the continued vacancies may eventually force real estate owners to abandon, foreclose and/or demolish them. The real estate market will remain in this state until demand picks up again for one reason or another.

In part 5 that follows, these dynamics of supply and demand are applied for Dubai residential real estate market. A dynamic model of supply and demand for Dubai real estate market is used to forecast the future of the market and understand its dynamics.

5. Dynamics of Supply and Demand in Real Estate Market

This part of the study develops a dynamic supply and demand model for Dubai residential real estate market. The real estate price plays an important role in the adjustment process in this model. There is no single study on Dubai real estate market that has tried before to explicitly bring together real estate supply, demand and price and study how they interact over time. This gap on Dubai real estate market is filled by this study.

5.1 Model description and calibration

This section describes the model and how it is calibrated. Please note that the supply and demand in this section are flows and not stocks. In other words, they are the net additions to supply and demand over time. This is because these supply and demand flows are the ones that influence the price over time. The supply, demand and price equations for Dubai residential real estate market and how they are calibrated are shown below:

(1) Flow supply: $Q_s = 10908 + P$

(2) Flow demand: $Q_d = 36488 - P$

(3) Price change ΔP: $P_{t+1} = P + a*(Qd - Q_s) = P + 0.1*(25580-2P)$

Where Q_s is flow supply, Q_d is flow demand, P is price and P_{t+1} is price in the next period. P is normalized to 1 in the base year 2006 so that the flow quantities of supply and demand of the base year are reproduced by the model. Please note that the price here is not an absolute value in Dirham, but it is an index. The parameter a assumes the value of 0.1 to ensure the global stability of the model so that it converges to equilibrium over time. The change in price ΔP is taken as a function of excess demand over supply, where a is a parameter that determines the speed of adjustment between supply and demand (Shone, 2001). When there is excess demand, price rises by proportion a of this excess demand. Similarly, if there is excess supply, i.e. negative excess demand, price will fall by this proportion and will continue to fall until market equilibrium is attainted. The value of a depends on the sensitivity of the

price to excess demand. If price is sensitive to excess demand then ***a*** will take a higher value and therefore the market dynamics will take less time to restore market equilibrium. If price is insensitive to excess demand then ***a*** will take a smaller value and therefore the market dynamics will take more time to restore market equilibrium. Therefore, it is expected that a relatively competitive real estate market to adjust very fast while a relatively monopolistic one to take longer time to adjust. As it is shown in table 2.2.1 in section 2.2 in part 2, the real estate market is by its nature less competitive relative to other product markets. Therefore, the small value that the adjustment parameter ***a*** assumes can be justified on this ground.

The above specification of demand and supply equations (1) and (2) gives an inelastic demand and supply with respect to price; both have price elasticity of less than unity in the base year. This specification does justice to the real estate market realities of being less responsive in the short term. The data used to calibrate these equations are actual figures and estimates using the best available data and recent figures from the literature on Dubai real estate market.

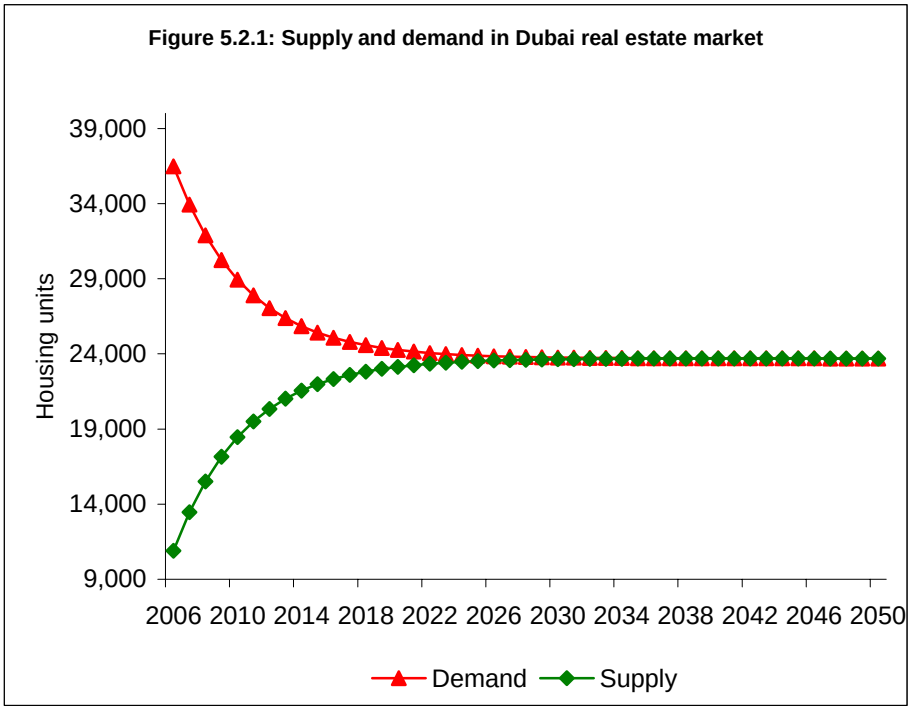
The flow demand for residential units in the base year 2006 is estimated to be 36,487 units. This is calculated using the change in Dubai population between 2005 and 2006. In 2005, Dubai population was 1,321,453. Using Dubai long term population growth rate (average for the period 1975-2005) of 6.90282 per cent gives a population of 1,412,671 in 2006. Then the net population change between 2005 and 2006 is 1,412,671 – 1,321,453 =91,218 persons. This population flow is divided by the number of persons per a standard household unit, which is 2.5 using the standards of some EU countries such as Austria and Belgium (refer to section 4.1 in part 4). This gives flow demand for residential units of 36,487 in 2006.

The flow supply of residential units in the base year 2006 is estimated to be 10,909. This is calculated based on the estimate of EFG-Hermes for 2006. EFG-Hermes estimated that about 10,000 residential units were added to the market in the first 11 months of 2006. This gives an average of 909 units per month in 2006. If we add the 909 units for the remaining month of December 2006, then the total of residential units that were delivered to the market in 2006 was 10,909 units.

5.2 Model baseline scenario

Plugging the above mentioned values for flow supply and demand into equations (1), (2), and (3) of the model and normalizing the price to unity in the base year 2006, then the model is solved for a baseline scenario. Figure 5.2.1 below shows the baseline solution of the model over time. The model baseline solution has reproduced the flow supply and demand for residential units in Dubai in the base year 2006. Please note that these are supply and demand flows and not stocks, that is, annual changes in supply and demand of residential units. This model baseline solution scenario is based on the current conditions in Dubai real estate market in terms of population, income, cost and availability of mortgage financing, costs of production inputs, state of technology, real estate regulations, tastes, preferences, and expectations of buyers and sellers about the future. If these factors change over time, then either supply or demand or both will shift and this will lead to price change. Such possibilities are discussed in the next section under policy simulations.

Figure 5.2.1: Supply and demand in Dubai real estate market



Source: Authors' calculations

As figure 5.2.1 shows, there is excess demand in Dubai residential real estate market and it takes time for the market to converge to equilibrium. The process of adjustment works through the price increase. The price increase causes demand to fall and supply to rise over time till they converge to equilibrium. Here, we can think of two

equilibrium points in time one is medium term equilibrium and the other is long term equilibrium. The medium term equilibrium is defined here as that point in time where there is an almost but not exact and complete convergence between supply and demand in the market. The long term equilibrium is defined as that point in time where there is an exact and complete convergence between supply and demand in the market. According to these definitions, the medium term equilibrium is reached around the year 2023 and the long term equilibrium is reached in the year 2052. For the medium term equilibrium, the price has increased by CAGR of 10 per cent during the period 2007-2023. For the long term equilibrium, the price has increased by CAGR of 4 per cent during the period 2007-2052. If the government is looking for an objective criterion for setting a rent cap, then the 10 per cent makes a lot of sense for the medium term. The long term real estate price increase of 4 per cent is very consistent with some EU countries rent cap such as the Netherlands. This means that when Dubai real estate market becomes mature enough and reaches its steady state in the long term, then the real estate annual price increase may just be covering the annual inflation rate plus a small margin as real return on real estate investment. If it is assumed that the inflation criterion for the members of the GCC monetary union will be 3 per cent, just like that of the EU members, then 4 per cent annual price increase will guarantees a real positive return of 1 per cent above the inflation rate.

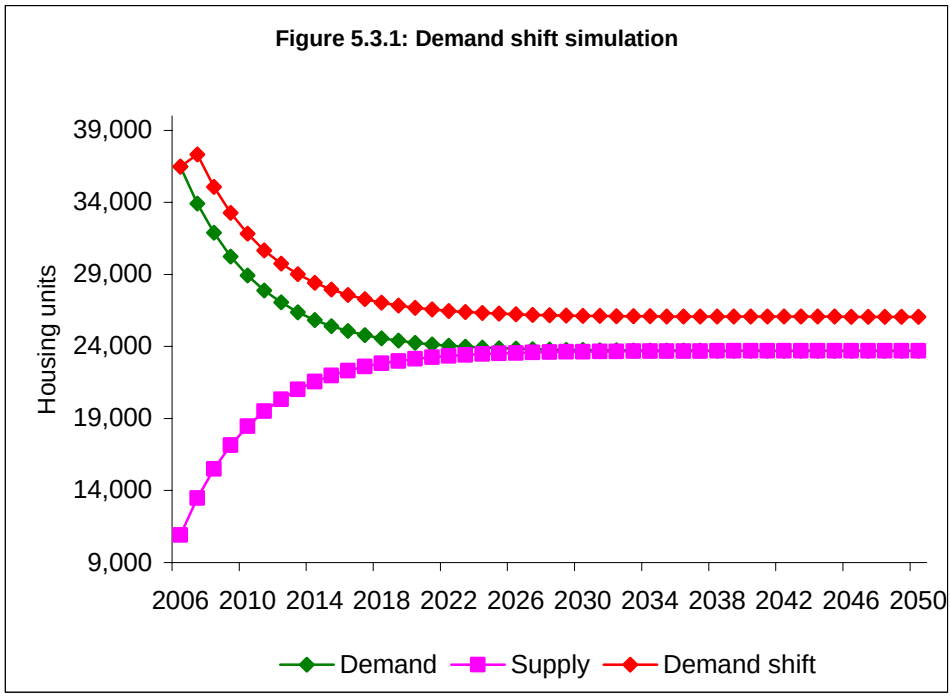
It should be noted that if the market is relatively more competitive (i.e. the adjustment parameter ***a*** assumes a relatively higher value), the market equilibrium between supply and demand could have been reached much earlier than the time horizon mentioned above. The time horizon of 2023 should not be taken literally, but it should be understood to mean that the market dynamics will take time to adjust supply and demand. Therefore, it is expected that it will take some time before Dubai real estate market cools down. It is expected that the market will not cool down before at least 5 years from now, assuming that the government has done nothing to promote the demand and supply of real estate. Any government policy measures that boost the demand and supply of real estate are expected to keep the market momentum on and push it further in time. This possibility is discussed below under policy simulations.

5.3 Policy simulations

If it is agreed that the baseline scenario of the model is a fair representation of Dubai residential real estate market, then a number of policy simulations can be run to see how the market reacts to policy shocks over time. These policy simulations are demand shift, supply shift, combination of demand and supply shifts and promotion of competition. As it is discussed in section 2.4 in part 2, the determinants of real estate demand and supply are those factors within a defined real estate market that cause demand and supply to shift and lead to price changes.

5.3.1 Demand shift policy

The first policy simulation that is run is a demand shift through pro-demand policy measures. Please remember that in the baseline scenario of the model only the price variable influences demand, assuming other variables are not changing. As we have discussed in part 4, these other variables are population, income, cost and availability of financing, buyers' tastes and preferences, and the expectations of buyers about the future. These are called shift variables and change in any one of them leads to increase in demand for real estate and this causes the demand curve to shift upward. In this policy simulation, it is assumed that pro-demand government policy measures to influence the shift variables has resulted in a 10 per cent increase in demand for real estate. This is shown in figure 5.3.1 by the shift of the demand curve from the green curve to the red curve, with supply remains the same. This means that the excess demand is maintained over time and hence it will take longer time for the market to converge to equilibrium. The policy lesson here is that if the government would like to keep the heat in Dubai real estate market then demand boosting policy measures are needed. Any policy measures that positively influence population, income, cost and availability of financing, buyers' tastes and preferences, and the expectations of buyers about the future will contribute to the increase in real estate demand.



Source: Authors' calculations

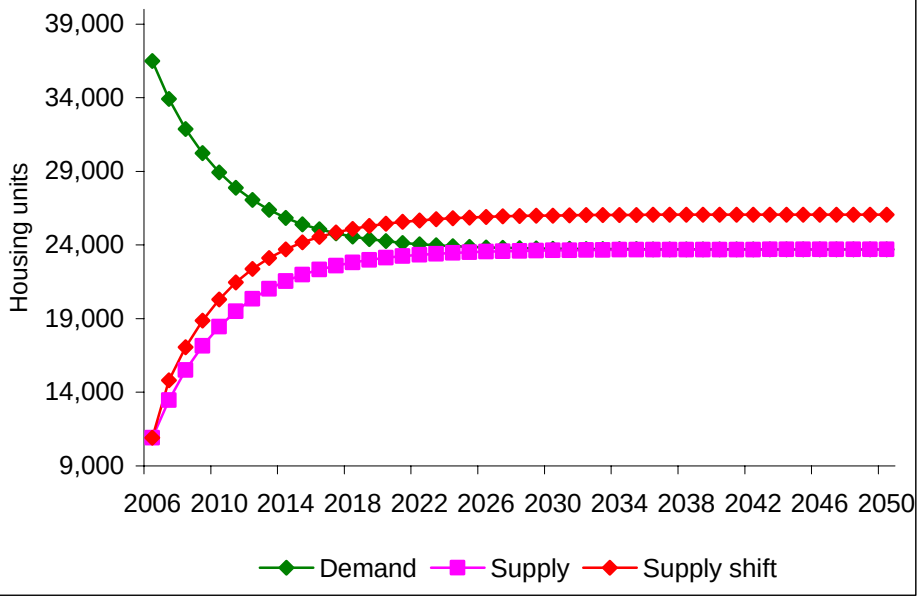
5.3.2 Supply shift policy

The second policy simulation that is run is a supply shift through pro-supply policy measures. As we have discussed in part 2 section 2.4, the primary determinants of real estate supply that cause the price to change are the costs of production inputs, cost of financing, advances in technological know-how, and expectations regarding future demand.

In this policy simulation, it is assumed that pro-supply government policy measures to influence the determinants of supply have resulted in a 10 per cent increase in the supply of real estate. This is shown in figure 5.3.2 by the shift of the supply curve from the pink curve to the red curve, with demand remains the same. This means that the supply catches up with the demand relatively faster (as indicated by the convergence of the red supply curve and the green demand curve) than in the baseline scenario (as indicated by the convergence of the pink supply curve and the green demand curve) and therefore it takes shorter time for the market to converge to equilibrium. The new medium term equilibrium is established at a lower price and a higher level of trade relative to the baseline scenario. The new medium term equilibrium is reached in a 5 year time shorter than the in baseline scenario. That is, it is reached at the year 2017 in the policy simulation compared to the year 2023 in the

baseline scenario. The policy lesson here is that if the government would like to take the heat out of Dubai real estate market and stabilize it then supply boosting policy measures are needed. Any policy measures that positively influence the real estate costs of production inputs, cost of financing, advances in technological know-how, and expectations regarding future demand will contribute to the increase in real estate supply.

Figure 5.3.2: Supply shift simulation

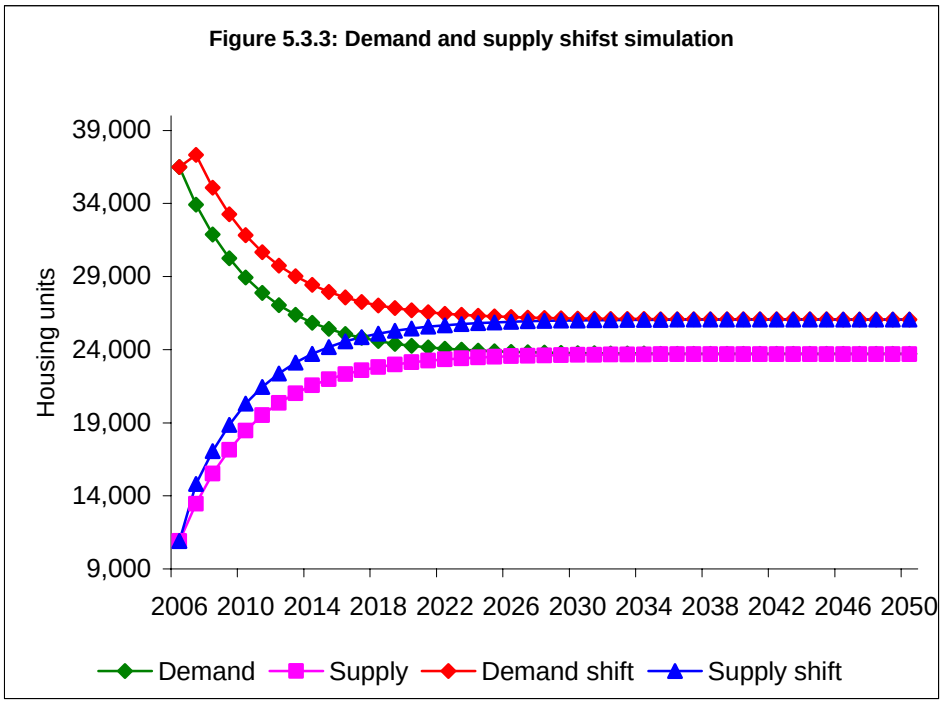


Source: Authors' calculations

5.3.3 Combination of demand and supply shifts policy

The third policy simulation is a combined policy of demand and supply shifts that are shown in the previous two simulations. As we have seen in the demand shift policy, the market does not converge to equilibrium, and my take a very long time to happen, if it happens at all (refer to figure 5.3.1). In the supply shift policy, the equilibrium is reached sooner than latter (refer to figure 5.3.2). The combined policy of shifting demand and supply at the same time, takes an intermediate position and the equilibrium is established somewhere between the demand shift and supply shift (refer to figure 5.3.3). The combined policy medium term equilibrium is established further in time and at both a higher price and a higher quantity compared to the baseline scenario and the supply shift scenario. The policy lesson here is that if the

government would like to maintain the current momentum of Dubai real estate market and push it further in time, then policy measures that promote both supply and demand are needed. Any policy measures that will positively influence population, income, cost and availability of mortgage financing, costs of production inputs, state of technology, real estate regulations, tastes, preferences, and expectations of buyers and sellers will contribute to this policy scenario.



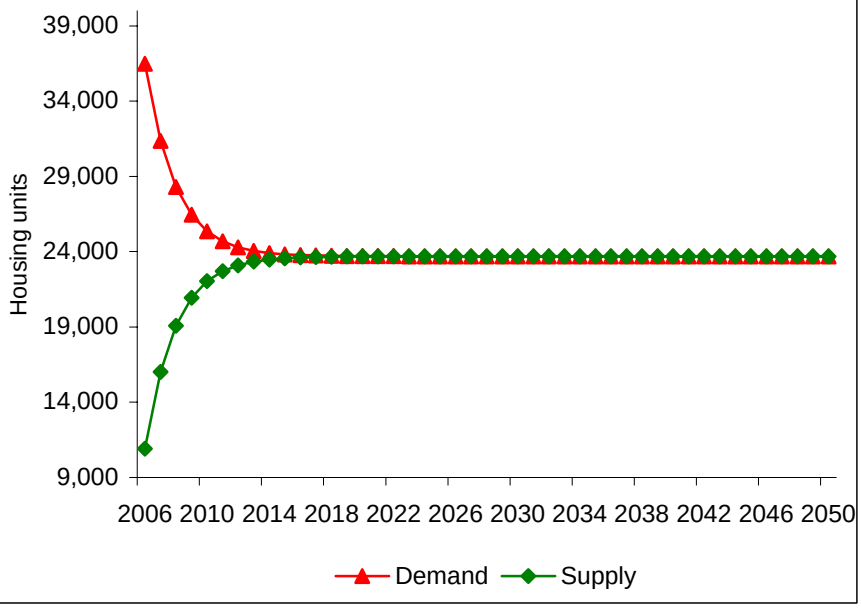
Source: Authors' calculations

5.3.4 Competition promotion policy

The fourth policy simulation is promotion of competition in Dubai real estate market. As it is discussed in section 5.1, the speed of adjustment in real estate market depends on the relative competitiveness of the market, as reflected in the value of the adjustment parameter ***a***. In this policy simulation, the value of the adjustment parameter ***a*** is changed from 0.1 to 0.2 to reflect an improvement in the market competitiveness. As it can be seen from figure 5.3.4, the market takes less time to converge to the medium term equilibrium. In the baseline scenario, the market reaches the medium term equilibrium in the year 2023 and in this policy simulation it reaches the medium term equilibrium in the year 2014. That is, the adjustment time is reduced by 9 years. This fast adjustment is brought about by a relatively higher price, compared to the baseline, which checks demand and stimulates supply. The policy

lesson here is that if the government would like the supply and demand for real estate in Dubai to catch up relatively fast, then policy measures that promote competition in real estate market are needed. These policy measures are more opening up and liberalization of real estate market, information disclosure, flexible land and real estate regulations, and more liberalization of labour and capital markets, among others.

Figure 5.3.4: Promoting competition in Dubai real estate market



Source: Authors' calculations

6. Conclusions

The primary objective of this study is to analyze the recent developments and the dynamics of Dubai real estate market and shed some light on the outlook of the market for the coming years. The study has developed a dynamic supply and demand model for Dubai residential real estate market, in which the real estate price plays an important role in the adjustment process.

The model results show that the market dynamics will take time to adjust supply and demand. It is expected that Dubai real estate market will not cool down before at least 5 years from now, assuming that the government has done nothing to promote the demand and supply of real estate. Any government policy measures that boost the demand and supply of real estate are expected to keep the market momentum on and push it further in time.

The model results show that the real estate price has increased by CAGR of 10 per cent in the medium term. In the long term, the price has increased by CAGR of 4 per cent. If the government is looking for an objective criterion for setting a rent cap, then the 10 per cent makes a lot of sense for the medium term. The long term real estate price increase of 4 per cent is very consistent with some EU countries rent cap such as the Netherlands. This means that when Dubai real estate market becomes mature and reaches its steady state, then the annual price increase will just be covering the inflation rate plus a small margin as real return on real estate.

The model policy simulations show that demand boosting policy measures that positively influence population, income, cost and availability of financing, buyers' tastes and preferences, and the expectations of buyers about the future will contribute to the increase in real estate demand. Supply boosting policy measures that positively influence the real estate costs of production inputs, cost of financing, advances in technological know-how, and expectations regarding future demand will contribute to the increase of real estate supply. Policy measures that promote competition in real estate market such as more opening up and liberalization of real estate market, information disclosure, flexible land and real estate regulations, and more liberalization of labour and capital markets will increase the speed of adjustment in Dubai real estate market and hence the market will take less time to adjust.

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