

Analyzing Apartment Demand: Projections and Challenges

May 2003

Research

Youguo Liang, Ph.D., CFA
Managing Director
Tel 973.683.1765
youguo.liang@prudential.com

Nancy M. Gordon
Director of Research
Tel 973.734.1308
nancy.m.gordon@prudential.com

Prudential Real Estate Investors
8 Campus Drive
Parsippany, NJ 07054

Ph 973.734.1300
Fax 973.734.1319
Web www.prudential.com/prei

Introduction

Institutional investment in apartments has skyrocketed over the years, as evidenced by the rise of the sector's share in the NCREIF Property Index from 2 percent in 1984 to about 18 percent in 2002. The apartment sector is also quite large, which is not surprising because housing is one of life's basic necessities.

In fact, the apartment sector, on a par with retail, comprises the largest of the five main real estate categories after the office sector. It forms 28 percent of the commercial real estate market, with a value of \$1.3 trillion and roughly 16 million units, in structures with five or more units. In terms of debt, the multifamily sector had outstanding mortgages worth \$483 billion, as of the third quarter of 2002.

The apartment sector deserves special attention because it has a perfect substitute for itself – owner-occupied housing. Rental apartments compete directly with owner-occupied housing – single-family homes, condominiums and mobile homes – because people needing housing do not have to rent; they may buy. Thus, analyzing the demand for rental apartments is complex because the alternative of homeownership must be factored into the mix.

To provide a framework to forecast demand growth in the multifamily sector, we have developed a demand analyzer that can aggregate three factors: household growth, growth from population waves and growth from homeownership changes.

Household Growth

The projected population growth is about 0.9 percent per year. Household formation is also growing, but its rate of growth is faster than the population growth rate. This may seem counterintuitive but can easily be explained by population waves, a swelling in numbers of a particular age group. The echo boomers, the children of the baby boomers, were born between 1977 and 1998.

Exhibit 1 shows the rise in numbers of the 20- to 29-year-old age group. In 1977, the first echo boomers were born. In 1997, when they turned 20, there were 37 million people in the 20 to 29 age range. **Exhibit 1** shows the swelling of this age group, which won't peak until 2018, with 43.7 million people.

The entry of the echo boom into the workforce and into the prime rental age group will serve as a major demand driver for the next 10 years. Echo boomers will help drive household formation at a rate of about 1.1 percent per year, higher than the population growth rate of 0.8 percent to 0.9 percent.

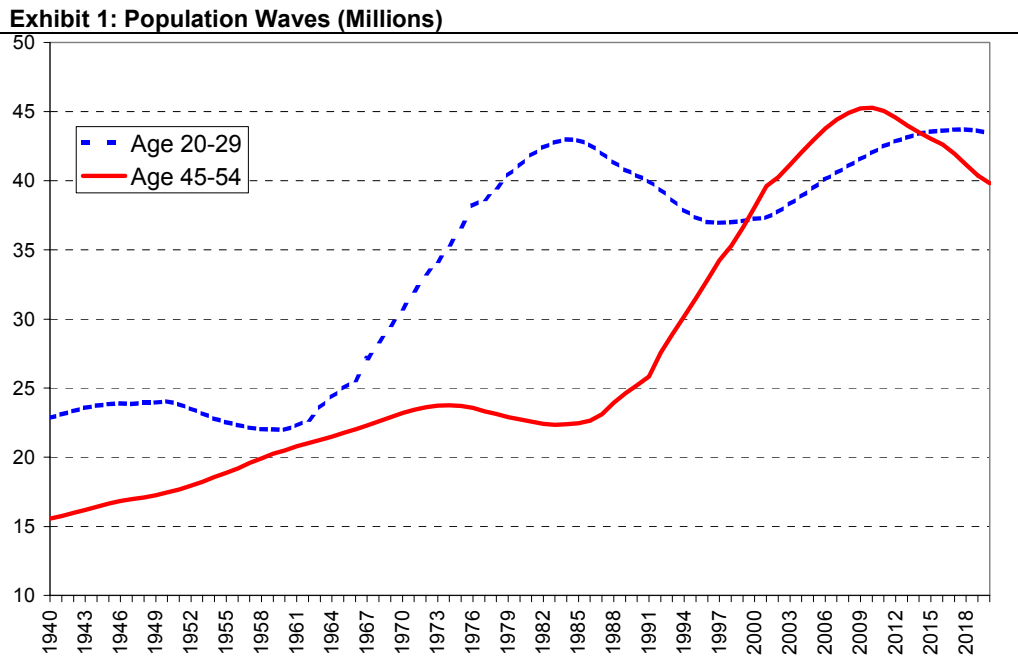
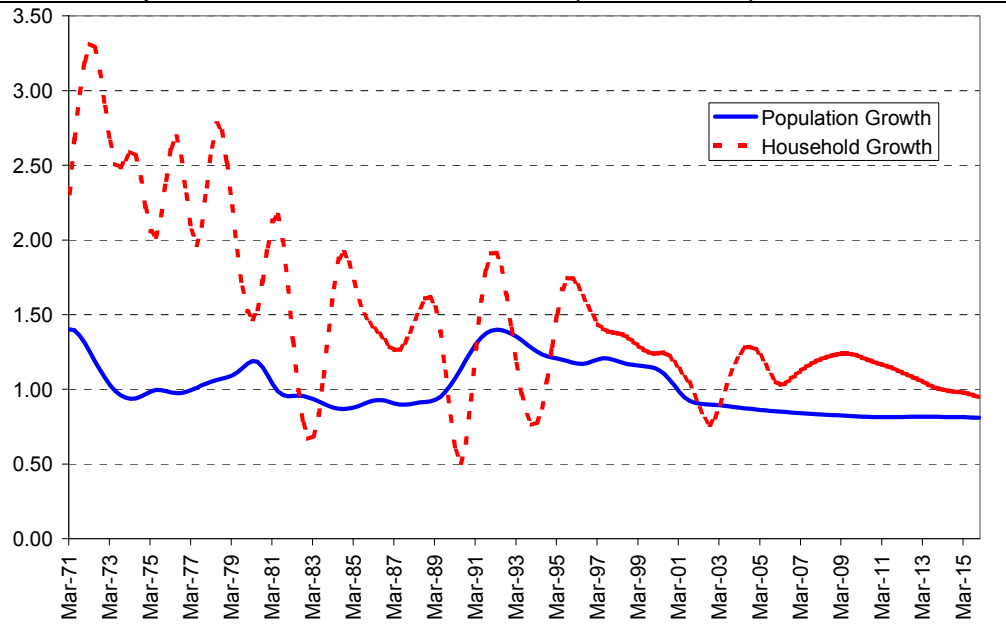


Exhibit 2 shows that the household growth rate has been as high as 3.3 percent in the early 1970s but has trended downward in a fairly volatile pattern since then. This volatility can be attributed to business cycles. When the economy is strong, many young people are able to find jobs and can therefore afford to move away from home, which results in increased household formation. Also, in strong economies, immigration tends to rise. When the economy is weak, young adults continue to live with their parents or move back home, if they have been renting. And immigration tends to fall in a weak economy. The volatility of household growth translates directly into fluctuations in demand growth for apartments.

Exhibit 2: Population and Household Growth Rate (% Annual Rate)



Source: Economy.com (projections as of January 2003)

Population Waves

The echo boomers have a higher propensity to rent than any other age group, for a variety of reasons. They are just finishing school and entering the work force, have not yet formed families of their own, do not yet have the money to buy a home, and they prefer more sociable settings, such as urban environments. These factors bode well for apartment demand.

People under age 35 have the highest likelihood of renting, with 59 percent of this group doing so (see **Exhibit 3**). However, as people age, form families and save money, they become more likely to own a home, rather than rent an apartment. Thus the effect of the echo boom's propensity to rent is somewhat counterbalanced by their baby-boom parents, who are much less likely to rent, with only between 19 percent and 32 percent of them doing so, depending on which age group they belong to.

Exhibit 3: Estimating Rental Demand Growth Caused by Population Waves

	Households in 2000 (millions)	% Increase 2000-2005	% Increase 2005-2010	Propensity to Rent (%)
Under 35	24.0	0.55	4.80	59
35-44	24.7	-3.70	-7.60	32
45-54	20.7	12.15	5.56	24
55-64	13.7	23.37	19.38	19
65+	22.4	4.12	8.52	20
Total	105.5	5.55	5.29	33
Estimated Demand Growth*		0.19	0.11	

* Assuming constant propensity to rent by all age cohorts; formulas not shown.

Sources: Harvard Joint Center for Housing Studies; US Census; Prudential Real Estate Investors

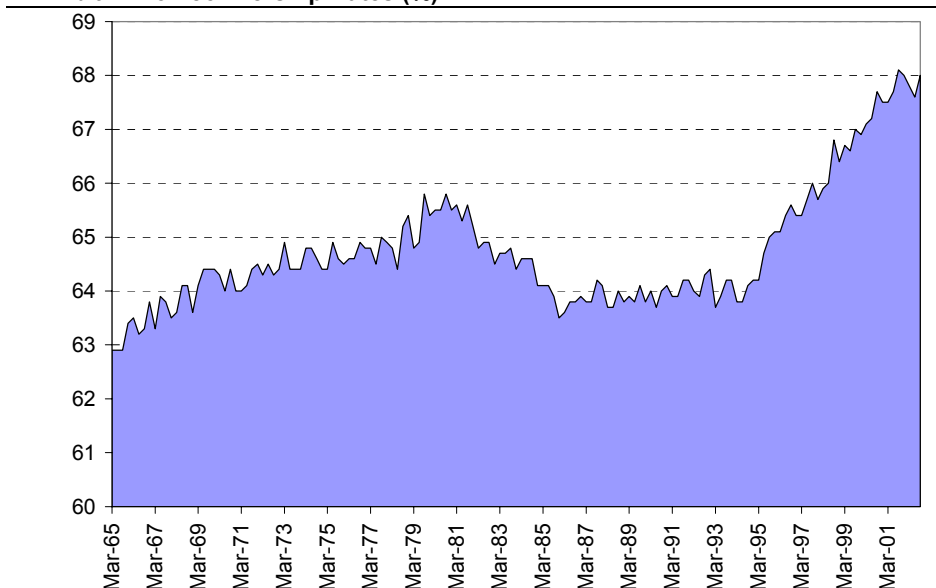
As both the baby boomers and the echo boomers age, we are able to estimate the percentage of increase in apartment demand based solely on the changing age composition of the US population by combining the two factors of the echo boom’s high propensity to rent and the baby boom’s low propensity to rent. This net contribution to rental demand growth is projected at 20 basis points, or 0.20 percent per year. Demand growth stemming from population waves may range from a low of 15 basis points to a high of 25 basis points, according to our simulation analysis. **Exhibit 3** illustrates one scenario using the household growth projections from the Harvard Joint Center for Housing Studies. In this case, the estimated demand growth for multifamily rental housing is 19 basis points, assuming a 5.55 percent net increase in the total number of households.

Homeownership Rates

The most uncertain factor in determining demand for multifamily rental housing is the homeownership rate. Changes in this rate are difficult to foresee because these fluctuations depend on a variety of factors, such as interest rates, unemployment, household income, the savings rate, housing prices and the economic outlook in general. Because roughly one-third of all US households are renters and two-thirds are homeowners, when the homeownership rate rises 1 percent, this causes a corresponding decline in rental demand of 3 percent. Thus, changes in homeownership rates, either up or down, have the opposite effect on rental demand growth by a factor of three. For this reason, those seeking to predict apartment demand must carefully analyze possible shifts in the homeownership rate.

Despite a sluggish economy, the homeownership rate now stands at a historic high of 68 percent. As can be seen in **Exhibit 4**, the homeownership rate is subject to significant volatility, increasing from below 63 percent in 1965 to almost 66 percent in the early 1980s. In the late 1980s and early 1990s, it stabilized in the neighborhood of 64 percent. In 1995, however, it began its long, steady rise to today’s 68 percent. This 4 percent increase in homeownership caused a decline of about 12 percent in apartment demand, although this is not a net demand change, since other factors also contributed to apartment demand.

Exhibit 4: Homeownership Rates (%)



Source: US Census

Going forward, however, the direction of the homeownership rate is uncertain. But even more uncertain than this is the magnitude of the change we may see. Our base estimate is a slow but rising trend of 10 basis points per year, which translates into a 1 percentage point increase in the homeownership rate over the next 10 years. Two other scenarios assume a decrease in the homeownership rate of 5 basis points or an increase of 25 basis points (see **Exhibit 5**). These possible changes in the homeownership rate will affect apartment demand decline or growth by a factor of three. Thus, apartment demand could decrease by as much as 75 basis points or increase by as much as 15 basis points, based solely on the change in homeownership rates. This 90 basis point range from low to high indicates that homeownership rates are the wild card in forecasting apartment demand.

Exhibit 5: Estimated Trend Demand Growth for Rental Housing (2003-2011)

	High(%)	Base(%)	Low(%)
Growth in Households	1.25	1.10	0.95
Growth From Population Waves	0.25	0.20	0.15
Growth From Homeownership Change*	0.15	-0.30	-0.75
Total Rental Growth	1.65	1.00	0.35

*Assumes a yearly homeownership change of -0.05%, 0.1% and 0.25%

Source: Prudential Real Estate Investors

Forecasting Demand

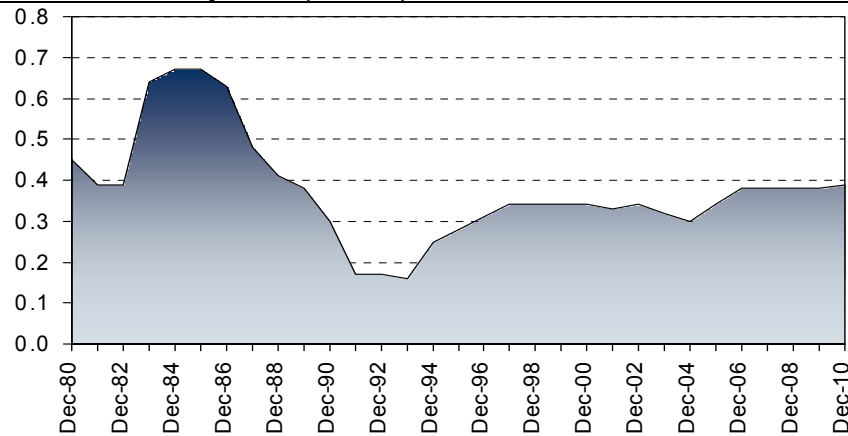
By aggregating the three factors, growth in household formation, growth from population waves and growth due to changes in homeownership rates, our baseline projection of total rental demand growth is 1 percent per year (see **Exhibit 5**).

Total multifamily rental demand growth could range between 165 basis points and 35 basis points, according to the high and low scenarios. This large range mainly results from uncertainties in homeownership trends. The biggest contributor to the variation in our estimate is the household formation rate, with a forecast 1.1 percent increase. The population wave shift represented by the echo boomers moving into the prime rental age group actually contributes a relatively small amount to apartment demand growth, only 20 basis points. Yet this amount underestimates the actual contribution of the echo boomers to rental demand growth because their effect is counterbalanced by the baby boomers. Furthermore, the echo boomers contribute disproportionately to household formation growth, as can be seen by the difference between household growth and population growth, which is about 20 to 25 basis points. This difference can largely be attributed to the echo boomers.

Reconciling With Starts

Besides looking at the demand for multifamily rental housing, we also need to consider the apartment supply. The US population of roughly 290 million people consists of about 109 million households. Of those 109 million, about 32 percent are renters. Approximately 16 million of these renters rent multifamily housing in structures with five or more units. Thus a 1 percent increase in demand for rental housing, which is our baseline projection, means that an additional 160,000 multifamily units (1 percent of 16 million) need to be built each year. Yet, we know from building permits that about 300,000 to 330,000 apartment units are now started each year (see **Exhibit 6**).

Exhibit 6: Multifamily Starts (Millions)



Source: Economy.com

At first glance, common sense tells us that this seems like a vast oversupply of apartment units. Keep in mind, however, that we need to estimate a depletion rate, or rate at which multifamily properties can no longer be used for rental purposes. They may no longer be available for use because of loss through fire, demolition, decrepitude and natural or human disasters. This number is difficult to estimate – we cannot predict activities such as demolition with precision, and disasters are random. For example, when the economy is healthy, older buildings are more likely to be pulled down. Another means of rental apartment loss occurs when units are pulled from the rental market and converted to owner-occupied housing. If we assume that buildings, on average, last 100 years, the depletion rate would be 1 percent per year. The US government assumes a much higher depletion rate for multifamily structures, estimating a lifespan of 65 years, or a depletion rate of 1.5 percent per year.

Another big uncertainty, however, is the number of multifamily units built each year that are sold as owner-occupied units versus those held as rentals. The historical average is that 90 percent are for-rent units and 10 percent are intended for owner occupation in the form of condos and co-ops. But this proportion can change depending on the economic situation. When the housing market is strong, that 90 percent share declines as more units are built for sale. When the housing market is weak, that 90 percent rises as more units are held for rental purposes. Also, the decision on how many units will be sold versus rented is often not made until the units are ready for occupancy, based on the housing market conditions at the time. Thus, making precise estimates of the ratio of sold versus rental units at any given time is challenging.

To reconcile demand with starts, we assume multifamily construction starts of about 300,000 to 335,000 per year. We also know that historically, about 90 percent of the units built will be rental units and 10 percent will be sold as condos or co-ops. Subtracting 10 percent from the estimated starts gives us 270,000 to 300,000 new rental units each year. With demand growth estimated at 1 percent of the existing 16 million units, we can calculate a demand for about 160,000 new units each year. Subtracting 160,000 from the number of new units for rent gives us 110,000 to 140,000 residual units, i.e., the number of units that seem to be in excess. Dividing the amount of “excess” units by the total stock results in an implied depletion rate of 0.7 percent to 0.9 percent (110,000/1,600,000 to 140,000/1,600,000). This implied depletion rate is not above the typical

depletion rate of 1 percent to 1.5 percent per year, assuming a lifespan of 65 to 100 years for an average building.

Summary

Because the current construction level is about 300,000 to 335,000 units per year, with approximately 90 percent destined for the rental market, according to the historical average, about 270,000 to 300,000 units are added each year to the apartment rental stock. With demand growth of about 1 percent per year, or 160,000 units, we can estimate an implied depletion rate of 0.7 percent to 0.9 percent, which is close to or below an estimated 1 percent to 1.5 percent depletion rate per year. The balance of the market will hinge largely on whether or not the actual depletion rate is in line with the implied depletion rate. To more accurately reconcile the construction level with demand growth we must deal with two supply uncertainties, the share of multifamily housing that will be for rent versus sold and the depletion of stock due to disasters and demolition. Both these factors are difficult to estimate because they depend on circumstances that can't easily be predicted.

The demand analyzer we have developed for the multifamily rental sector serves to aggregate three factors – growth in household formation, growth from population waves and growth from changes in the homeownership rate. Our base-case scenario projects a 1 percent increase in multifamily demand each year. The biggest contributor to this equation is household growth, with its estimated 1.1 percent increase each year. The population wave shift contribution is smaller than one would anticipate, mostly because of the baby boomers counterbalancing the echo boomers. The factor with the greatest amount of uncertainty is the homeownership rate, which depends on numerous trends that are difficult to predict. Because homeownership can substitute for apartment rental, analyzing apartment demand growth provides forecasters with a complex challenge.

Prudential Real Estate Investors
8 Campus Drive
Parsippany, NJ 07054

Tel 973.734.1300
Fax 973.734.1319
Web www.prudential.com/prei

© Copyright 2003, Prudential Real Estate Investors

Prudential Real Estate Investors is a business unit of Prudential Investment Management, Inc., a registered Investment Adviser and indirect wholly owned subsidiary of Prudential Financial, Inc., Newark, New Jersey.