

**The U.S. Homebuilding Industry: A Half-Century of Building the
American Dream**

John T. Dunlop Lecture
Harvard University
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The US Homebuilding Industry:

A Half-Century of Building
The American Dream

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This monograph was adapted from the John T. Dunlop Lecture at Harvard University delivered by Barbara T. Alexander, a Senior Advisor at UBS Warburg LLC and an Executive Fellow at the Joint Center for Housing Studies at Harvard University, on Thursday, October 12, 2000.

The author wishes to express deepest appreciation to her colleagues at UBS Warburg who assisted in the research and production of this monograph including, in particular, James T. Kalyvas and Christa H.P. Alexander.

The U.S. Homebuilding Industry: A Half-Century of Building the American Dream

It is a signal honor to have the opportunity to deliver the Second Annual John T. Dunlop Address. In addition to admiring John from his days as Secretary of Labor in the Ford Administration, I have enjoyed the opportunity to interact and work with him during much of the last two decades. His scholarship and enthusiasm are unmatched in my experience, and his distinguished record of devotion to topics associated with the housing industry is second to none.

I would also like to thank all of those associated with the Joint Center for Housing Studies here at Harvard. These include Dean Joseph Nye of the Kennedy School, Dean Peter Rowe at the Graduate School of Design, and Nicolas P. Retsinas, who joined the Joint Center in 1998 after a long and distinguished career in government service, including a stint as Assistant Secretary for Housing and Commissioner of the Federal Housing Administration. Nic has brought renewed vigor, excitement and academic rigor to the most respected housing-focused research group in the country. Together with his colleagues, including Dr. Eric Belsky, Dr. Kermit Baker, and Dr. Pamela Baldwin, Nic manages an effort that is both academically exemplary and highly applicable to the evolving housing sector.

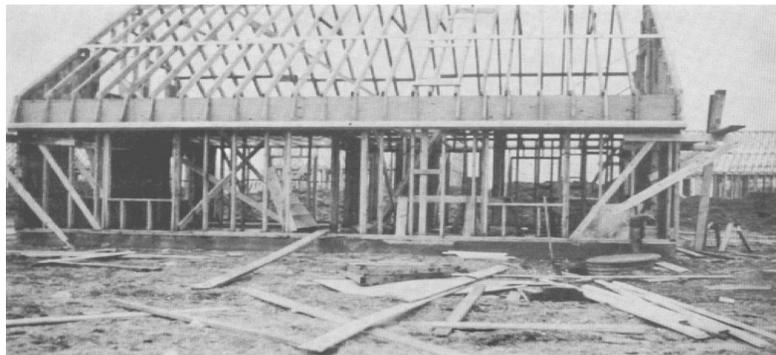
Précis

Last year's Dunlop Lecture, titled *Housing at the Millennium*, was delivered by Dr. Kent Colton, a friend and a long-time observer of and participant in the housing industry, and a Senior Fellow at the Joint Center for Housing Studies. Mindful of the desirability of avoiding either an arcane discussion of housing minutia or one with marked similarities to Kent's, I thought that it might be interesting to take a look at the housing industry from the perspective of homebuilders, reviewing changes in the last half-century and speculating on further change which might be expected in coming years.

Gathering and reviewing materials in preparation for this address, I was struck by the superficial similarity between homes built in 1950 and those constructed quite recently – particularly in the initial stages of construction.

Figure 1: A House Under Construction in Levittown, Circa 1950

House Under Construction in Levittown, Circa
1950



Source: Levittown Historical Society, *the History of Levittown, NY*, pg. 13. Used by permission.

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Source: Levittown Historical Society, *the History of Levittown, NY*, pg. 13. Used by permission.

Except for size and scale, a casual observer could well confuse this 1950 Levittown bungalow-to-be with a home built in the last 12 months.

Figure 2: New Home Under Construction, Circa 1999

New Home Under Construction, Circa 1999



Source: Centex Corporation.

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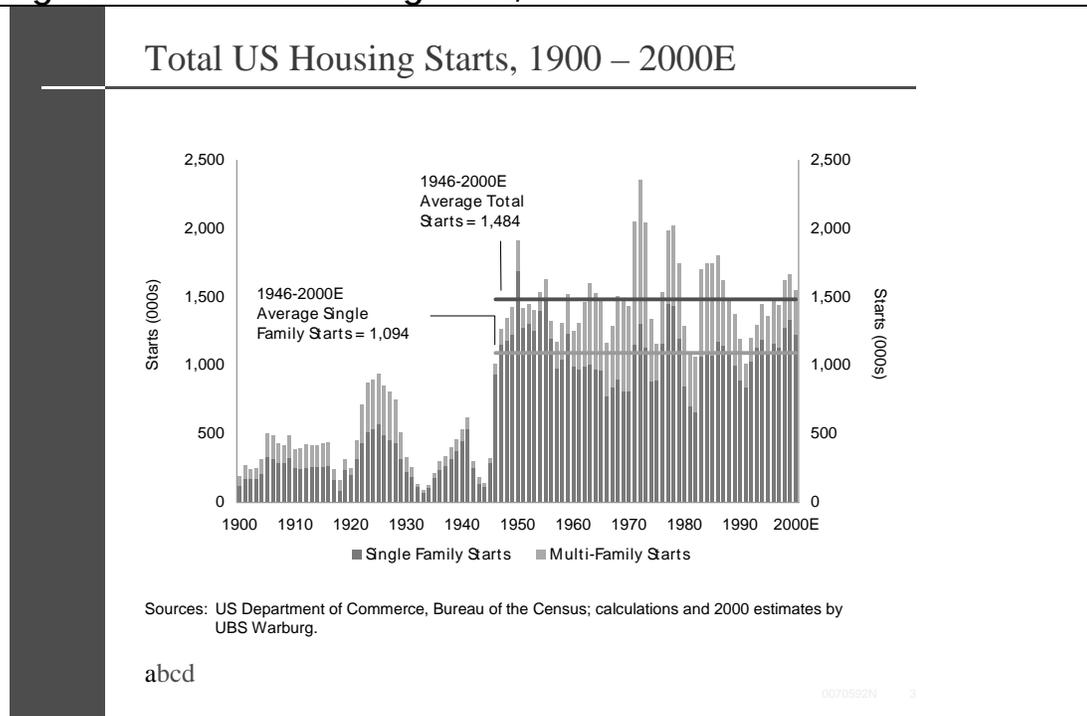
Source: Centex Corporation.

But despite the fact that today's homes have remarkable surface comparability with those built 50 years ago, dramatic changes have occurred during the last five decades which have affected the ways builders construct and market their homes, as well as the ways they finance and manage their own businesses. During the next 30-45 minutes, I would like to delineate some of these changes, spotlight their effects on the homebuilding industry, and speculate on the further evolution that can reasonably be expected in the homebuilding sector during the next decade-plus.

Product Changes

It takes a certain perversity to become enamored of a chart. Perhaps it is a throwback to my years studying mathematics, but the following chart, showing, as it does, housing activity throughout the 20th Century, is one that I find particularly compelling.

Figure 3: Total U.S. Housing Starts, 1900-2000E

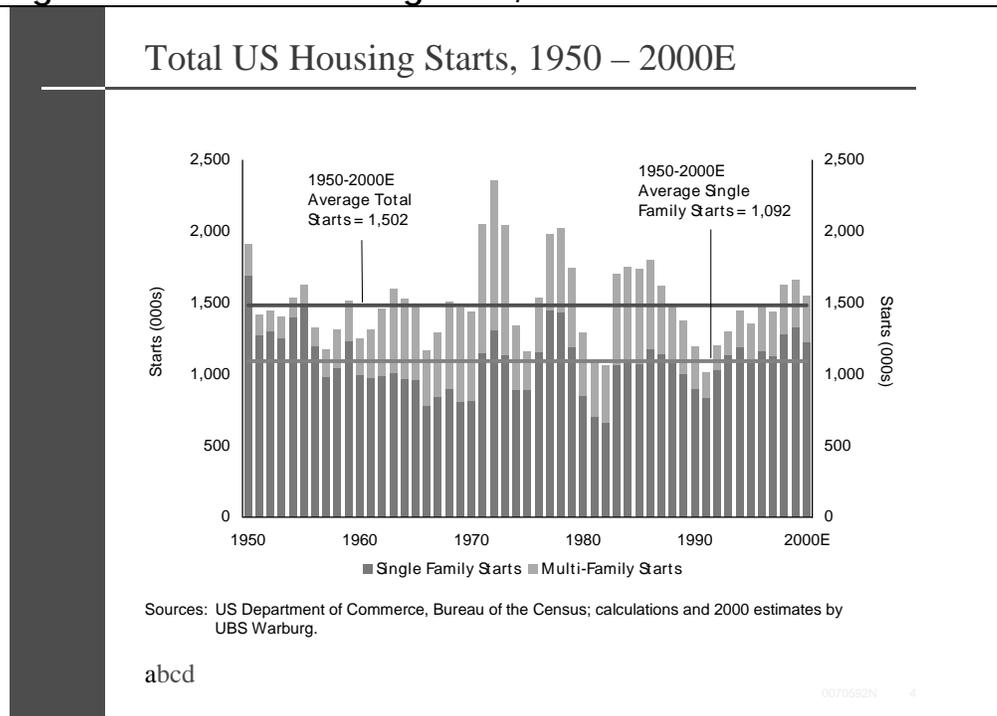


Sources: US Department of Commerce, Bureau of the Census; calculations and 2000 estimates by UBS Warburg.

Part of my fascination with this chart is doubtless the fact that it dramatically depicts the changes which occurred in post-World War II America compared with the first four-and-a-half decades of the century. Not only were post-1945 new housing starts 350% higher than those earlier in the century, but the growth of single-family production was an even more eye-popping 400%.

A 50-year view is less apparently dramatic, since it does not have the same "before and after" feel; eliminating that one-time change, however, provides a better showcase for the substantial variation that has characterized the last half-century.

Figure 4: Total U.S. Housing Starts, 1950-2000E

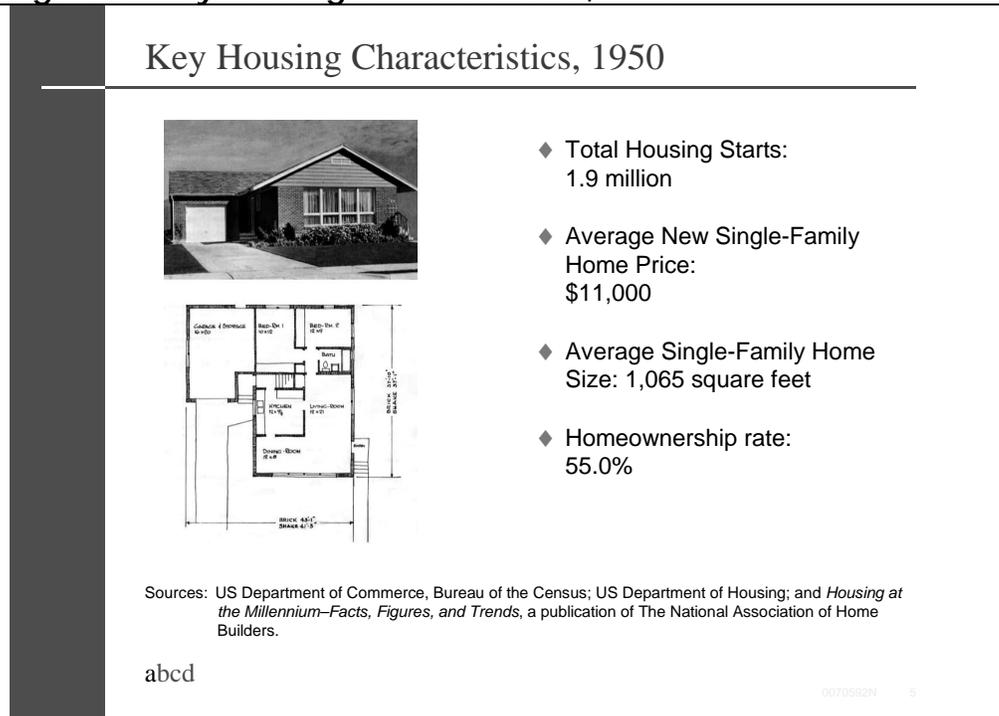


Sources: US Department of Commerce, Bureau of the Census; calculations and 2000 estimates by UBS Warburg.

Interestingly, although the data clearly reflect the cyclicity of the sector, they show average activity during the last 50 years totaling an impressive approximately 1.5 million housing starts, of which almost 1.1 million units were single-family dwellings.

While it is impossible to closely examine each of these years in the time allocated for this presentation, it is instructive to contrast some of the more important housing statistics for three of the years in order to better understand the product changes which occurred during the entire period. I have, somewhat arbitrarily, chosen the years 1950, 1972, and 1999 for this analysis. In addition to “bookending” the period, both 1950 and 1999 were years when housing activity – particularly in the single-family sector – was strong. And, 1972 has the distinction of being the year which saw the highest level of new residential construction activity in U.S. history. It is also a year during which multi-family activity was materially different than at either the beginning or the end of the half-century. Thus, if one must be selective, these present interesting years to review.

Figure 5: Key Housing Characteristics, 1950



Sources: US Department of Commerce, Bureau of the Census; US Department of Housing; and *Housing at the Millennium—Facts, Figures, and Trends*, a publication of The National Association of Home Builders.

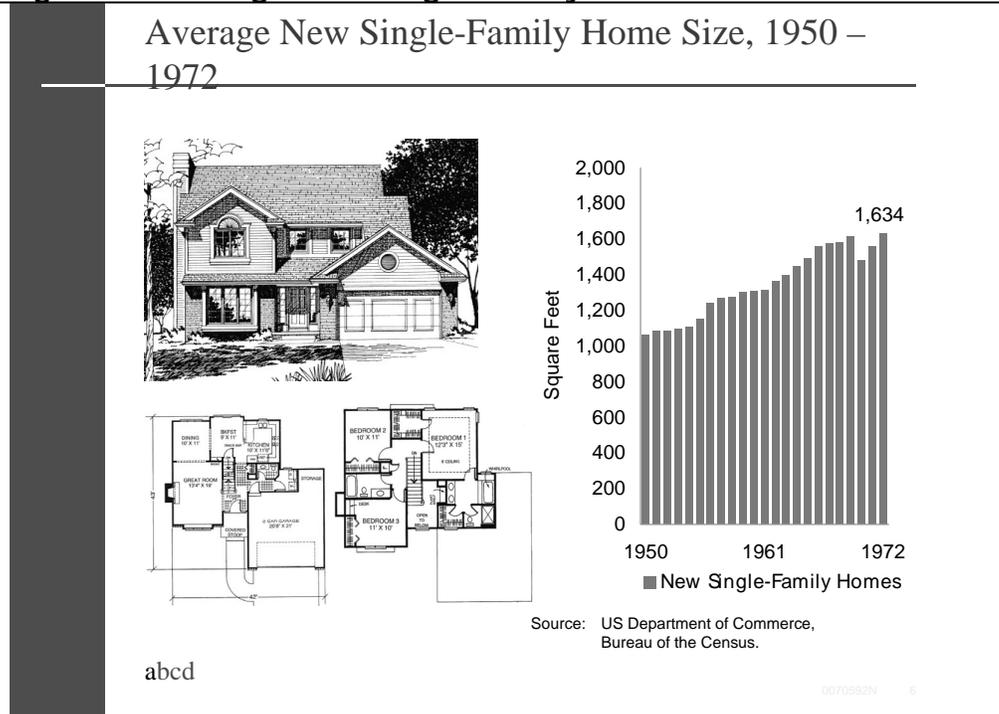
1950 was a very good year. Likely few of the people in this room remember it well (and I must confess that my attention was focused more on building blocks and less on buildings), but it is a particularly interesting year with which to begin this review. One reason is that housing in 1950 was stronger than it had been in any previous year – and this activity level was not surpassed for another two decades.

Housing starts in 1950 totaled 1.9 million units, of which a not-yet-equalled almost 1.7 million were single-family housing starts. One result was that single-family activity accounted for an astonishing 88% of total activity in 1950.

The average home in 1950 had 983 square feet of finished space and cost about \$11,000. Two-thirds of the homes had two or fewer bedrooms, and only 4% had two bathrooms or more. Central air conditioning was essentially unavailable. Yet the statistics show that these homes were snapped up at a record pace.

1972 was a very different year. Housing historians will remember it foremost for the fact that, in 1972, housing starts totaled 2.4 million units – a record. Others, however, are equally impressed by the fact that 44% of that year's record-breaking activity level was accounted for by multi-family units. Clearly something had changed in the 20-plus years since the 1950 statistics just quoted were compiled. Customer change is the answer, and I will turn to that issue in the next section of this presentation. Meanwhile, however, there were other notable changes as well.

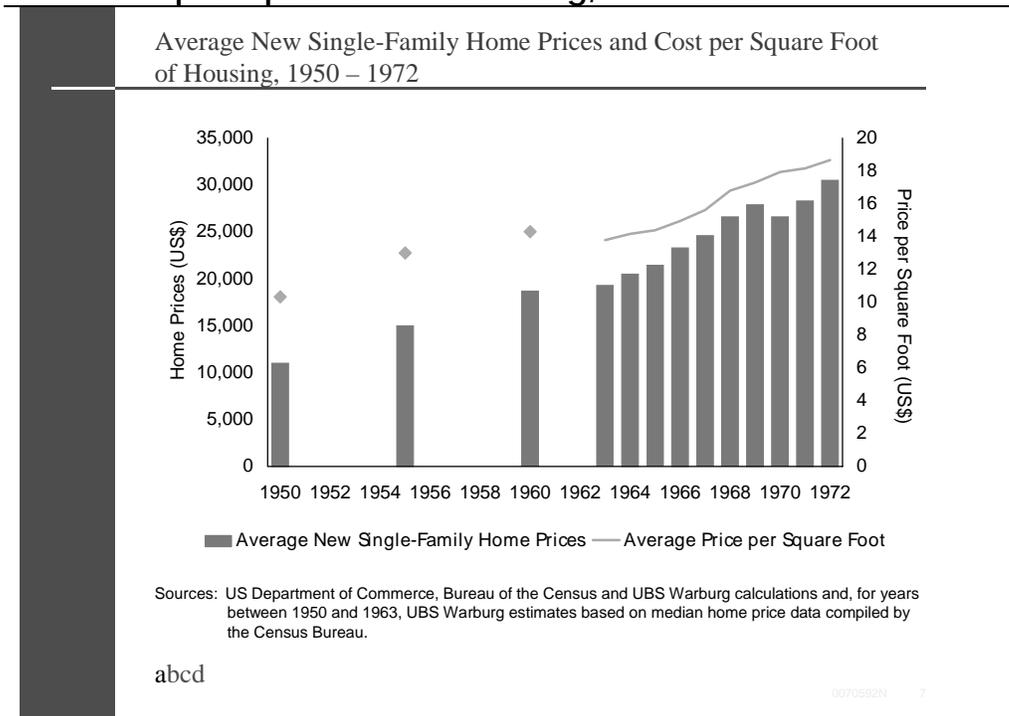
Figure 6: Average New Single-Family Home Size, 1950-1972



Sources: US Department of Commerce, Bureau of the Census.

Home sizes grew appreciably in the 1950s and 1960s, so that, by 1972, single-family homes (always larger on average than their multi-family counterparts) boasted an average finished area of 1,634 square feet, a 66% increase from the 1950 level. Another contrast is the fact that, while in 1950 two-thirds of the homes had two bedrooms or less, by 1972, 65% of the homes had at least three bedrooms, and an impressive 23% had four bedrooms or more. About half had one-and-a-half bathrooms or more, and 43% sported central air conditioning. External cladding was still principally brick and wood (which, in total, accounted for almost 70% of the dwellings built in that year) – a figure likely only modestly lower than in 1950 (although data for the earlier period are sketchy at best).

Figure 7: Average New Single-Family Home Prices and Cost per Square Foot of Housing, 1950-1972

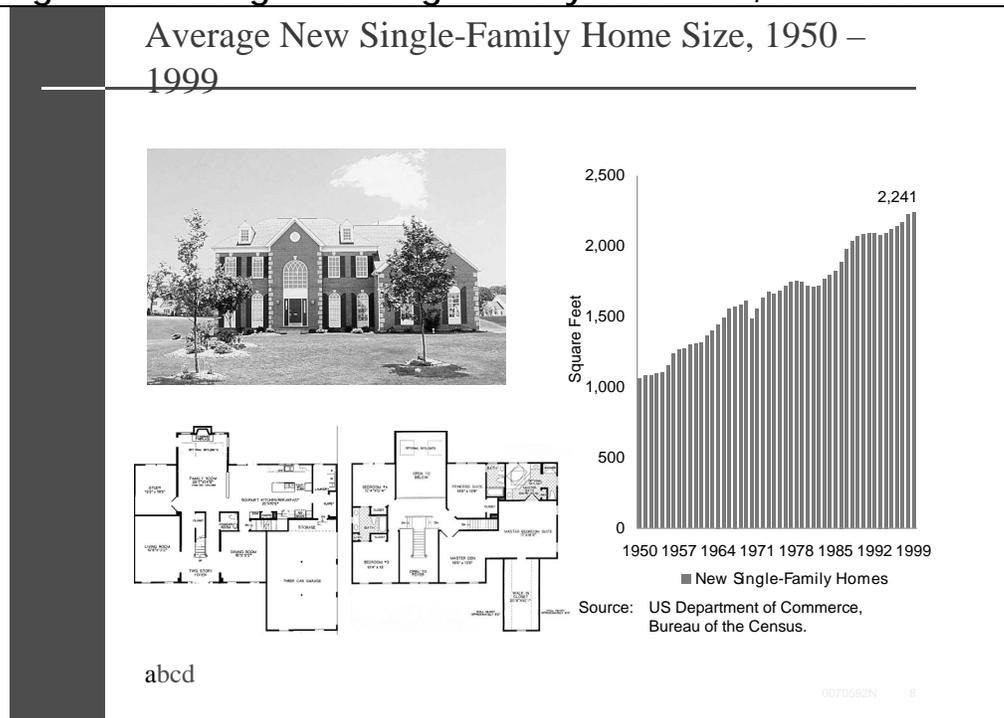


Sources: US Department of Commerce, Bureau of the Census and UBS Warburg calculations and, for years between 1950 and 1963, UBS Warburg estimates based on median home price data compiled by the Census Bureau.

Home sizes jumped by two-thirds between 1950 and 1972, so it's not surprising that home prices advanced as well – to an average \$30,500 per home. Price per square foot rose as well, reflecting the increasing frequency of central air conditioning, dishwashers and other quality-of-life enhancements – as well as the guns-and-butter inflation of the Vietnam era.

Fast forward to 1999 (for which the data are all available, unlike the forecasts that would be required for the same analysis if one were to use 2000 as the ending year), and the picture looks much more like the beginning of the half-century than the middle. Total housing starts of 1.7 million units consisted of 80% single-family units and only 20% multi-family dwellings. Homes continued to grow, with the average house boasting 2,241 square feet of finished space.

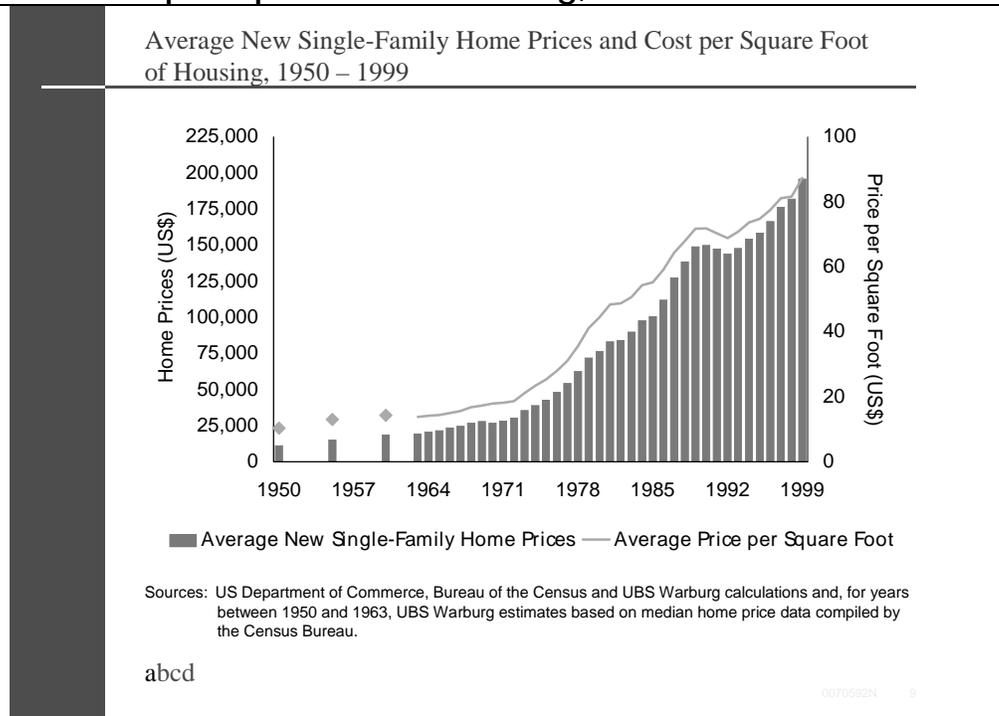
Figure 8: Average New Single-Family Home Size, 1950-1999



Sources: US Department of Commerce, Bureau of the Census.

The amenities found in these homes blossomed as well. By 1999, only 12% of new units had only one or two bedrooms, and only 7% had one-and-a-half baths or less – while 53% claimed two-and-a-half baths or more. Eighty-four percent came equipped with central air conditioning – a figure that must be close to saturation, in light of the fact that certain areas of the country simply do not require such service. Cladding choices had also changed considerably, so that brick and wood accounted for only 35% of total exterior cladding, while vinyl and aluminum siding had gobbled an astonishing 40% of that market.

Figure 9: Average New Single-Family Home Prices and Cost per Square Foot of Housing, 1950-1999



Sources: US Department of Commerce, Bureau of the Census and UBS Warburg calculations and, for years between 1950 and 1963, UBS Warburg estimates based on median home price data compiled by the Census Bureau.

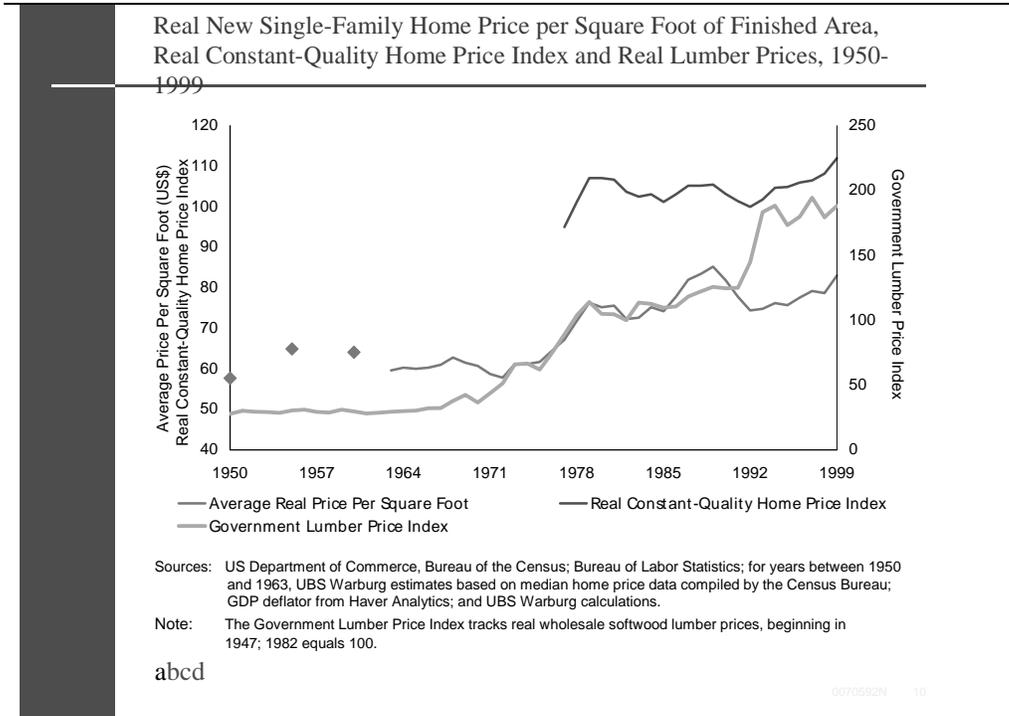
Prices had risen as well – in part, again, a function of the increasing size and complexity of homes. The average price per square foot of new homes reached an all-time high in 1999, passing the \$87 mark. Of course, one reason is that homes today are packed with features – some as simple as better insulation, life-time-warranted roofing, thermally efficient windows and the like that were not featured in the 1950s, but which have gradually been introduced – and enhanced – in the intervening years. Others are the upgraded products, such as Jacuzzi bathtubs, microwave ovens and the like that are standard features of many of today’s predominantly trade-up new homes. In addition, part of this escalation undoubtedly reflects increased land costs, since the cost of both house and lot are included in this series.

Land and development costs are another topic that would justify an entire presentation, for the issues – not to mention the politics and

emotions – associated with this home delivery component are quite complex. “Old style” growth, simplistically defined as creeping suburban subdivision sprawl, raises a host of issues, while “smart” growth, representing considerable constraints on such sprawl and a concurrent emphasis on second-use (or, as it is called in England where it is a much more significant source of potential lots than in the U.S., “brownfield”) residential development, has empirically caused finished lot prices to rise considerably in excess of the rate of inflation. Longer and more complex entitlement processes provide an additional part of the answer. Impact and related fees are another culprit. Other causative factors can be added to lengthen the list. A 1998 survey by the National Association of Home Builders, for example, found that environmental compliance alone now adds 10% to the cost of building a new house. As I will discuss later, the aggregate of these more demanding conditions affects homebuilders’ growth and market share penetration opportunities in different ways. In all cases, however, they add to the cost burden for homebuyers.

An analysis of the *real* cost of housing over the 50-year period yields even more interesting (and, I would argue, relevant) results. The following chart examines this topic from two perspectives, each with limitations, but both also yielding useful insights – and quite complimentary to each other. The first of these simply inflation adjusts the price-per-square-foot-of-new-housing data to which I have been referring. The principal shortcoming of the resulting series is that it includes land, although that shortcoming is relatively benign, since the vast majority of consumers’ home purchases include land. The other series is the Real Constant-Quality Home Price Index, again adjusted for inflation. Both tell a similar tale. For, while real amenities have been increasing (whether measured in terms of air conditioning, breadth of appliances, quality of materials, or other standards), average real single-family home prices peaked in 1989. It was not until 1999 that this figure was exceeded, and on a real-price-per-square-foot basis, 1989 remains the peak.

Figure 10: Real New Single-Family Home Price per Square Foot of Finished Area, Real Constant-Quality Home Price Index and Real Lumber Prices, 1950-1999



Sources: US Department of Commerce, Bureau of the Census; Bureau of Labor Statistics; for years between 1950 and 1963, UBS Warburg estimates based on median home price data compiled by the Census Bureau; GDP deflator from Haver Analytics; and UBS Warburg calculations.

Note: The Government Lumber Price Index tracks real wholesale softwood lumber prices, beginning in 1947; 1982=100.

The Real Constant-Quality Home Price Index is more ambiguous than the real-cost-per-square-foot measure. Based on the former, real home prices peaked in 1979, evincing some variability during the next two decades but not cresting that late-70s peak until 1998. The differences between the "readings" given by each series lies in the composition of the series themselves. Although both are adjusted using the same GDP deflator, the price-per-square-foot measure is a relatively simple calculation based on empirical data. The Constant-Quality Home Price Index, is, in contrast, to quote the government's definition, ". . . designed to measure changes over time in the sales

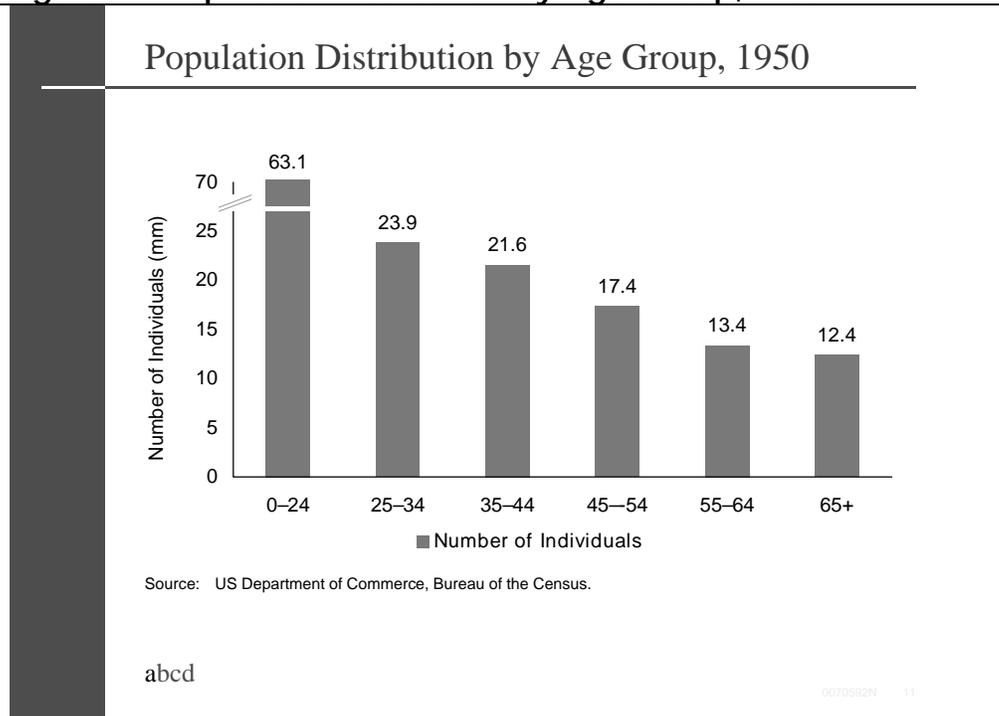
price of new single-family homes which are the same with respect to several important characteristics, including: floor area, geographic division, inside or outside of a metropolitan area (MSAs), number of fireplaces, bathrooms, and bedrooms, type of parking facility, type of heating, foundation and exterior, and whether unit has a deck." The Index is not designed to take into account other qualitative changes in units, and the individuals providing the Constant Quality data in each area vary from year to year. Thus, while it provides interesting corroboration, at least in part, of the relatively low escalation in real home prices, the somewhat subjective elements of its composition lead me to favor the straightforward real-price-per-square-foot series as more reflective of consumers' actual choices.

One reason that real per-square-foot home prices have not returned to their late-1980s high, in addition to the low level of general inflation, is likely the low inflation experienced during the last decade in many of the raw materials that are commonly employed in home construction. This is dramatically evident in the real price of lumber, which has fluctuated in a quite narrow band since 1993, despite robust housing-induced demand. Similar tales could be told about the real prices of many other building components. However, efficiencies in new home construction – the benefits of which have been largely passed on to homebuyers – also appear to have influenced this improved value equation. The competitive homebuilding environment has ensured that these are passed along to buyers, enhancing values in this (as in many other) sector of consumer spending.

Customer Changes

The proportion of single- and multi-family housing has shifted radically during the last 50 years – toward an increase in multi-unit dwellings in the early 1970s – and then back to a strong preference for single-family houses by century's end. Part of the overall demand picture, as well as a "snapshot" of the demand factors influencing housing type, can be found in the demographic composition of each period.

Figure 11: Population Distribution by Age Group, 1950



Sources: US Department of Commerce, Bureau of the Census.

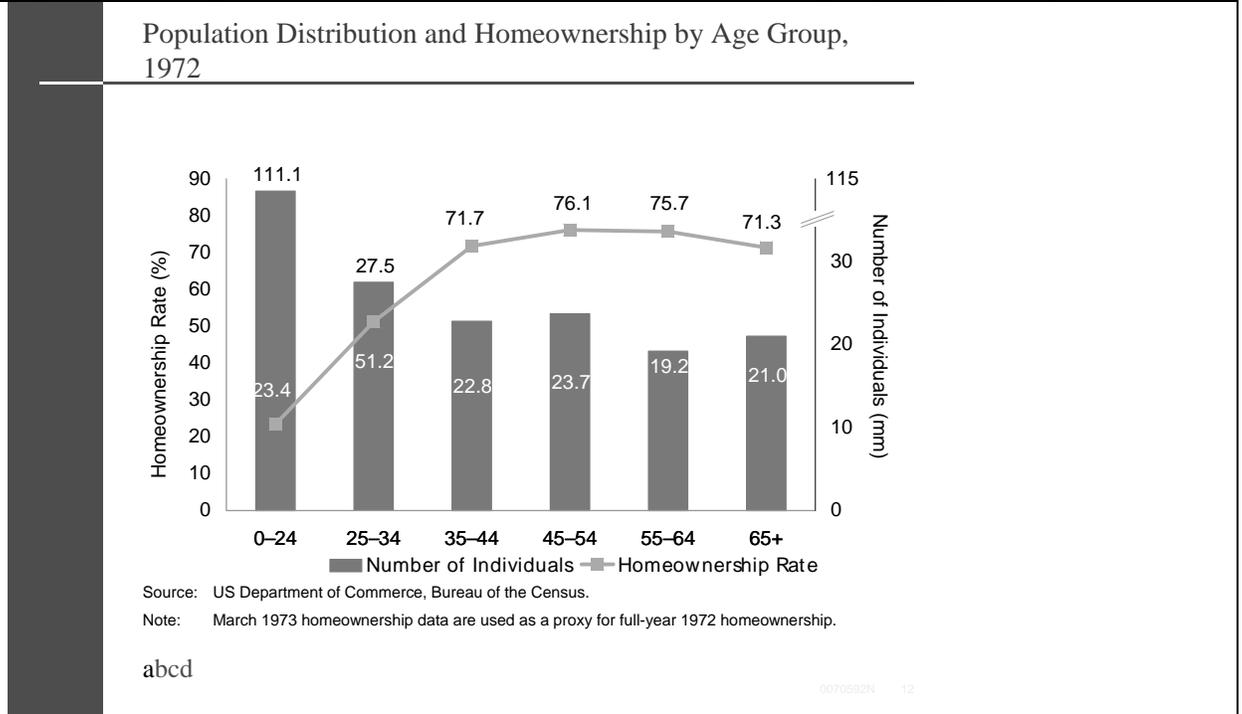
Many men came back from World War II and the Occupation to complete college and/or vocational training which had been deferred in whole or part when they joined the military. As they matriculated and formed households, and their ranks were swelled by those individuals who had not been of age to participate in World War II, the relatively low homeownership rates that characterized the combined group resulted in an expansion of the population of potential homebuyers above the levels that might have been expected from a review of the population statistics alone.

Add to this the fact that the median age at first marriage in 1950 for males was just under 23, and for females was just over 20, and the pool of homebuyers was both broad and deep.

The *type* of housing that was built in the 1950s was also influenced by the fact that the vast majority of the purchasers were first-time homebuyers. Contemporaneous articles, including a feature series in *The New York Times*, quoted housing experts who estimated that new homes in 1950 were half the size of units built 30 years earlier. Of course, 30 years earlier, in 1920, there were fewer than 250,000 total housing starts, of which, just over 200,000 were single-family units. The

point remains: 1950 was a boom year for housing, but it was, more specifically, a boom year for *starter* housing.

Figure 12: Population Distribution and Homeownership by Age Group, 1972



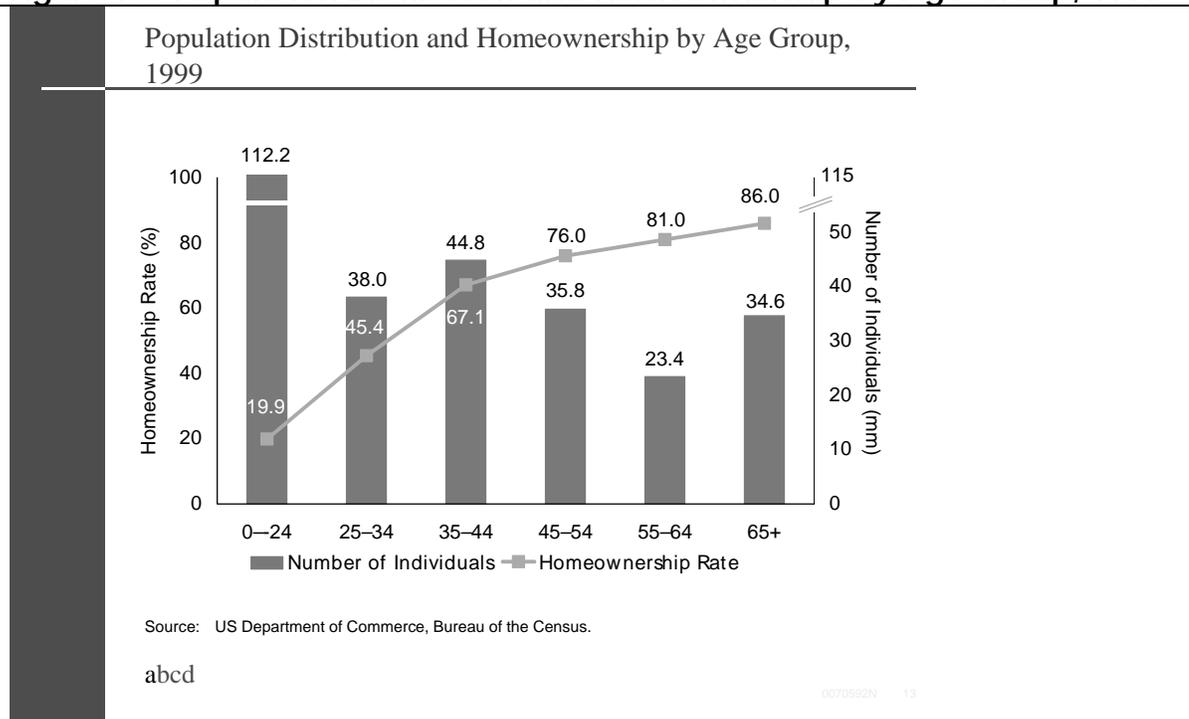
Source: US Department of Commerce, Bureau of the Census.
 Note: March 1973 homeownership data are used as a proxy for full-year 1972 homeownership.

Fast forward to 1972, and circumstances had changed. First of all, homeownership rates, now at a national level of 64%, compared with 55% in 1950, had risen in critical household formation age groups. In fact, in the core 45-54 year-old group, homeownership was actually marginally higher in 1972 than it was at century's end. Furthermore, with more young people attending college than ever before, age at first marriage had increased to over 23 for men and to 21 for women.

A meaningful (if difficult to precisely quantify) percentage of the multi-family units built in the early 1970s were, in a sense, a form of student housing, since many colleges and universities were caught flatfooted without adequate space for the number of baby boomers admitted each year. Off-campus living became increasingly common, even at schools that previously had prohibited it entirely – or at least for all but upperclassmen – as new apartments located near campus helped fill the student housing gap.

Then, as these students graduated, representing as they did the leading edge of the baby boom, they ignited a need for “regular-way” living arrangements – often opting for apartment living in their immediate, post-college years. When added to a tax environment that made capital investment in apartment buildings economically attractive, the result was a mushrooming of apartments in cities such as Dallas, Atlanta and Phoenix – to name only a few that experienced rapid job growth and equally turbo-charged population growth during those years. In light of the often-frenzied level of multi-family production, it is, perhaps, not surprising that some commentators with less historical perspective than the Joint Center predicted that, for decades to come, apartments and condominiums would account for the lion’s share of new housing production.

Figure 13: Population Distribution and Homeownership by Age Group, 1999



Source: US Department of Commerce, Bureau of the Census.

The changed mix of single- and multi-family housing production did not come full circle between 1950 and 1999 – but it certainly came close! The reasons behind the strong demand for single-family units were different between the two periods, however. Instead of returning servicemen forming households and swelling the ranks of homebuyers, the late 1990s saw housing demand attributable to native-born

Americans augmented by demand arising from foreign-born families and individuals.

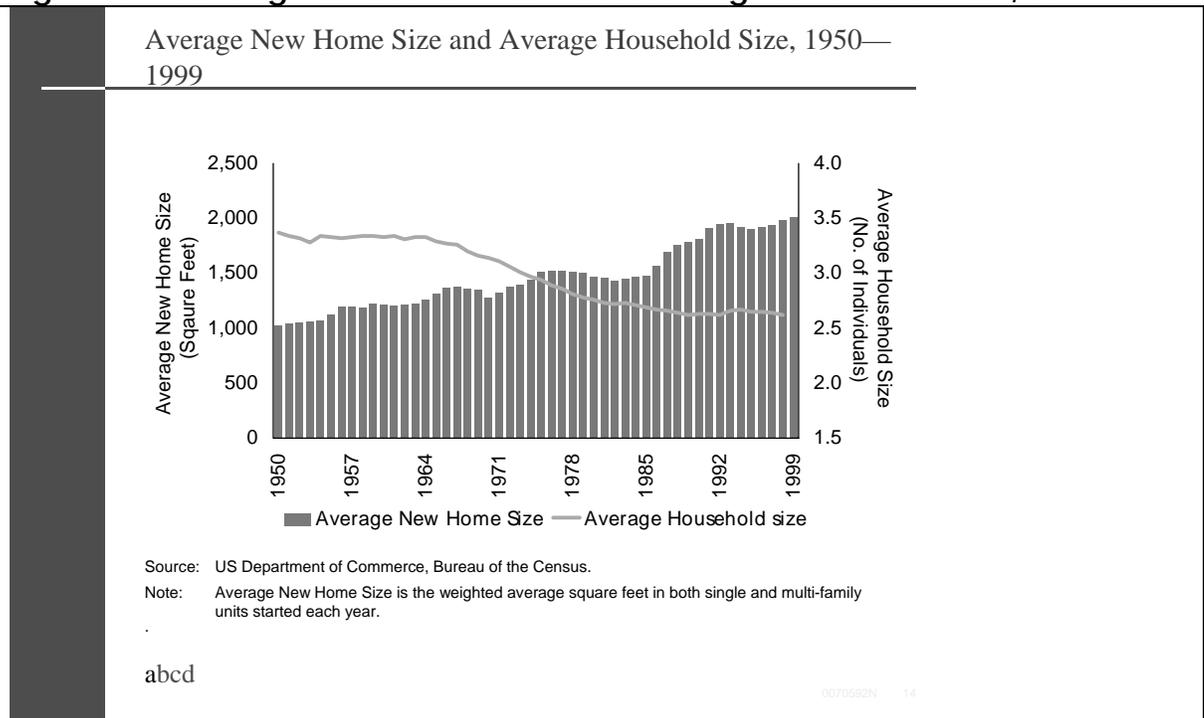
If I can digress for a moment, one of the most extraordinary research efforts of the Joint Center in recent years has been its investigation of the housing demand created by immigration and the homeownership trends of immigrants as they assimilate into the U.S. culture. It would be redundant – and I doubt that I could begin to do justice to the topic – to repeat the conclusions of work in this arena published over the course of several years by the team at the Joint Center. For any of you with an interest in the topic, however, I would refer you to a number of papers published by the Joint Center (including various editions of *The State of the Nation's Housing*) noted in the bibliography to this monograph.

The absence of a factor that increased multi-unit construction in the 1970s and 1980s is another part of the explanation for the multi-family/single-family mix shift between 1972 and 1999. Tax policies which boosted returns on all income real estate investments led to overbuilding in the 1970s, reaching distorted – and disconcerting – proportions as the 1980s unfolded. (Remember all those see-through office buildings?!) In contrast, when the tax law was changed, building came to a virtual halt in many markets to give demand an opportunity to catch up with the construction-in-excess-of-supply that had multiplied inventories. That process was painful in some markets, as well as in some income-real-estate classes. As equilibrium was reestablished, however, a considerably more moderate pace of such building has characterized the last decade.

And all this was happening as the Baby Bust generation moved into their 20s. Average age at first marriage continued to climb – to almost 27 for men and 25 for women. One result of these demographic changes was the far smaller proportion of starter home demand at the end of the century than at its mid-point. By the 1990s, existing units, many of which were, themselves, built as starter homes, filled much of first-time homebuyers' needs in established markets. It was only in areas rife with young household formations, such as Texas border communities, that 1,000-1,400 square-foot units continued to comprise an important share of production. The effects on average home size are self evident.

As a side note, it is interesting to observe how home sizes have grown while household sizes – i.e., the number of people in those homes – have contracted.

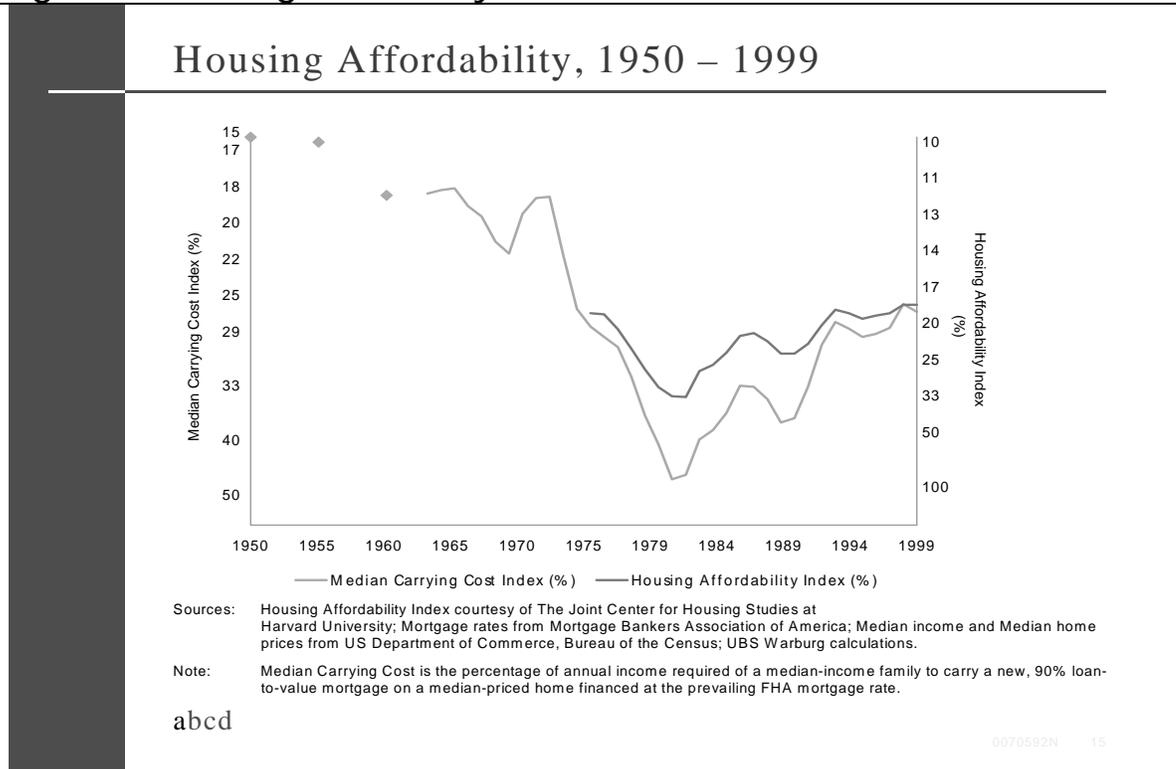
Figure 14: Average New Home Size and Average Household Size, 1950-1999



Source: U.S. Department of Commerce, Bureau of the Census.
 Note: Average New Home Size is the weighted average of square feet in both single- and multi-family units started in each year.

Of course, the average American household doesn't live in the average new house, since the housing stock is expanding at only about a 1% annual rate. Nor, in the interest of the simplification required by time constraints, have manufactured housing units even been mentioned to this point, despite the fact that shipments of such units, when added to housing completions, accounted for about 18% of new single-family production in the 1990s. Whatever the psychological, economic or demographic explanations one might cite, however, the evidence incontrovertibly points to the fact that, by the end of the 20th Century, the American consumer was living larger (at least in terms of home size per householder) than at any other time in the nation's history.

Figure 15: Housing Affordability, 1950-1999



Sources: Housing Affordability Index courtesy of The Joint Center for Housing Studies at Harvard University; Mortgage rates from Mortgage Bankers Association of America; Median income and median home prices from US Department of Commerce, Bureau of the Census; UBS Warburg calculations.

Note: Median Carrying Cost is the percentage of annual income required of a median-income family to carry a new, 90% loan-to-value mortgage on a median-priced home financed at the prevailing FHA mortgage rate.

Although population growth is critical in the housing demand equation, it is never enough to stimulate housing activity on the scale that we have witnessed throughout most of the last 50 years. Also present must be affordability. Affordability is no more an independent predictor of housing activity than are underlying demographics, but affordability provides the link in making the *theoretical* demand derived from population growth *effective*. Again, work done by the Joint Center for Housing Studies demonstrates the changes in affordability over the last 30 years, explaining, at least in part, the contraction in overall housing activity in the late 1970s when

affordability declined significantly. To provide a view of the entire half-century, a less sophisticated measure of the carrying cost of a median-priced home for a median-income family tells a similar tale. Both suggest that affordability has not been appreciably better than it is today for more than 25 years.

Process Changes

The United States boasts an extraordinary homeownership financing mechanism, which is the envy of builders with whom I talk from other countries around the world. The topic, itself, is deserving of a presentation far longer than this. Suffice it to say, however, that part of what contributed to the strength of single-family housing demand in 1950 was the availability of FHA mortgages carrying a 4.25% interest rate. By 1972, interest rates on FHA loans had risen to 7.00%. After a roller coaster ride to a peak of 17.5% in September 1981, the average interest rate on an FHA mortgage in 1999 was back down to a relatively affordable 7.46%.

But FHA rates don't begin to tell the entire tale of the interplay of the mortgage market and home purchasing in the last 50 years. In 1950, approximately two-thirds of all residential mortgages were originated by savings institutions, principally savings banks or saving and loan associations, which generally held them for the life of the loan. The rates of interest that such savings institutions could pay on deposits (their principal form of fundraising) was statutorily set by Regulation Q and changed infrequently. Thus, institutions were constrained in terms of the interest rates that they could pay on deposits. In addition, usury ceilings in most states limited the interest rate that could be charged on home loans. The spread between its typical borrowing and lending rates allowed for the profitable operation of most of these lending institutions. Managing a business with such constraints on its sources and uses of funds may not have required the abilities of a Jack Welch, but it was, by the same token, if not foolproof, then at least fool-resistant.

In addition to providing the banking industry with a statutory brake on high interest rate payments, Reg Q had the effect of providing the Federal Reserve Board with an important governor on the U.S. economy. Specifically, when rapidly expanding economic activity resulted in Fed action that raised short-term interest rates above the levels that these lending institutions were allowed, by law, to pay on deposits, funds would flow more slowly into them and, at times when the disparity was great, actual disintermediation would occur at the institutions. Thus, as interest rates edged up to the so-called Reg Q

ceiling, lending institutions would reduce the number of mortgages that they made – sometimes shutting the mortgage window entirely for borrowers in their communities. Conversely, when the Fed eased and rates fell below the Reg Q ceiling, funds streamed back into banking institutions, and mortgage availability rocketed ahead.

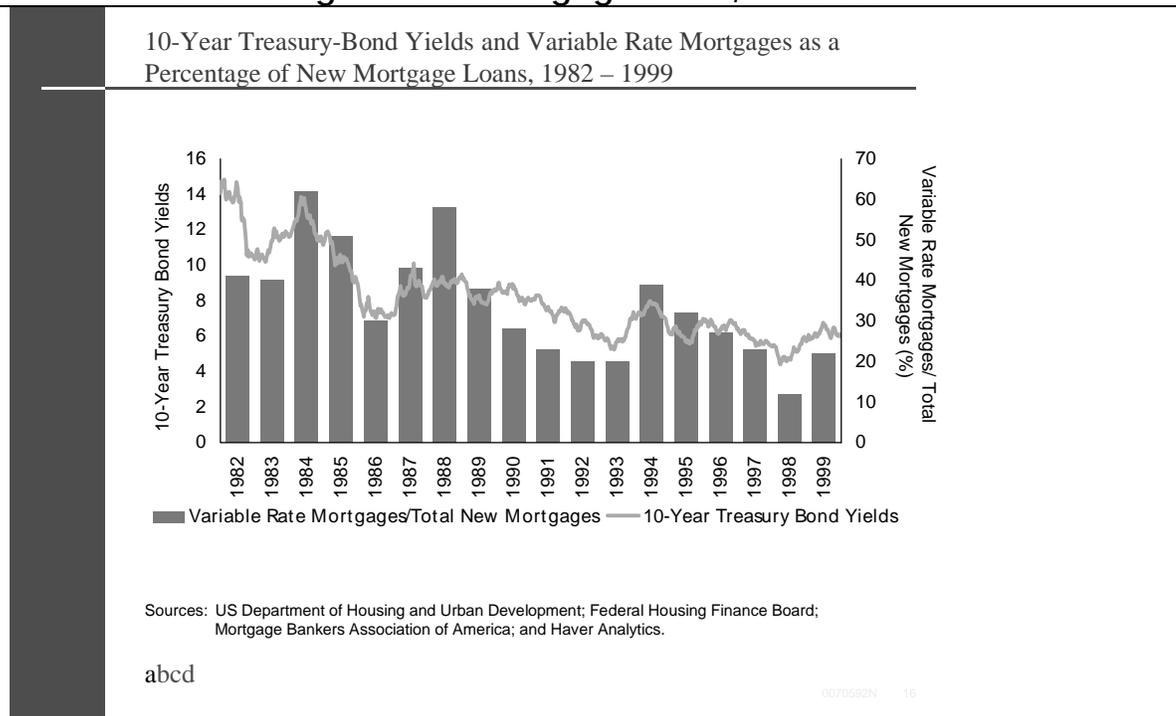
Reg Q has the distinction of being the principal reason for the housing cycles of the 1950s, 1960s and 1970s. Although Reg Q only “kicked in” when the economy was expanding at a pace that drove interest rates above its (somewhat artificially defined) ceiling – and cannot, as a result, be considered an independent variable – you would have found few in the homebuilding sector at the time who did not view it as *the* sinister force holding down an otherwise stronger-for-longer sector. However, Reg Q was not to last forever, and during the late 1970s, several factors began to emerge that have profoundly influenced home purchasing during the last 20 years.

- **The explosion of financial options.** In the late 1970s, the financial markets began to change quickly and substantially. First, money market instruments (such as Certificates of Deposit) were introduced by banks and thrifts which allowed them to pay higher rates of interest on deposits – provided the deposits were made in relatively large denominations. The requisite size dropped quickly, however, and it was not long before other competing investment alternatives – such as money market funds – became available.

The cascading changes quickly eliminated the relevance of Reg Q, and it was ultimately repealed. Together with the deregulation of the thrift industry – and resulting poor decisions by many thrift company managers – in the course of about a decade the result was the virtual disappearance of the thrift industry as an important mortgage lender.

- **Variable-rate loans.** In the 1980s, as a myriad of problems began to be reflected (albeit often in different ways) in the mortgage market, new instruments became available. The “plain vanilla” 30-year, fixed-rate mortgage remained the gold standard, but augmenting it were a variety of mortgages with other payment terms, including those with variable interest rates. Of course, variable-rate mortgage loans, reset periodically, were nothing new. In fact, they remain the principal loan type found in most other Western countries. They were relatively uncommon in the U.S. mortgage market before the early 1980s, however, but were quickly embraced by borrowers as the only practical alternative when the level of interest rates skyrocketed with rising inflation.

Figure 16: 10-Year Treasury Bond Yields and Variable-Rate Mortgages as a Percentage of New Mortgage Loans, 1982-1999



Sources: US Department of Housing and Urban Development; Federal Housing Finance Board; Mortgage Bankers Association of America; and Haver Analytics.

Today, the mix of fixed-rate and variable-rate mortgages shifts periodically, based principally on consumers' expectations of the general direction of interest rates, as well as reflecting the absolute levels of such rates. When rates are high, variable-rate loans are relatively common, not least because of the considerably lower initial interest costs that often accompany them. With no refinancing penalties (again, a huge advantage for consumers of the U.S. housing finance system compared with, e.g., England), consumers expect to be able to refinance mortgage loans with fixed-rate commitments when rates fall – and the ebbs and flows of the refi market clearly underscore the reasonableness of this expectation.

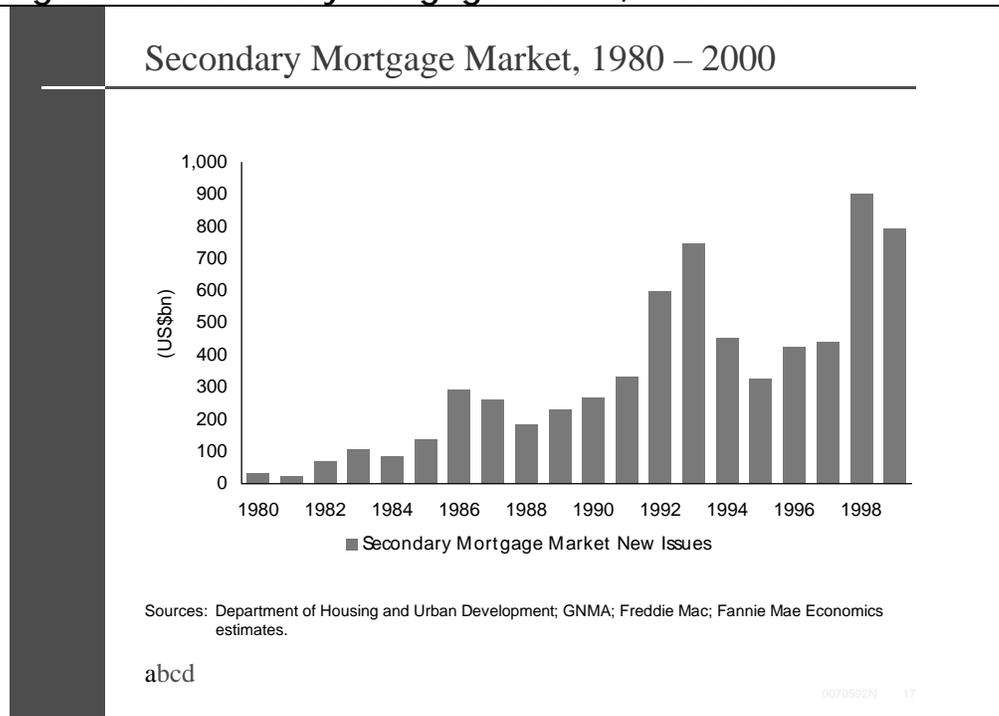
- **Secondary Mortgage Market.** The elimination of Reg Q, making mortgage finance available whatever the interest-rate climate in

the U.S., together with the advent of variable-rate mortgages and other hybrid mortgage securities, were dramatic changes in a market that had been extraordinarily predictable (some would say dull) for decades. However, in many respects the most incredible change has been the development and evolution of the secondary mortgage market.

Throughout the post-World War II era, as single-family housing activity exploded and homeownership grew to include a true majority of the population, virtually all mortgage loans were held by thrifts or, to a much lesser extent, banks and insurance companies – each of which held these loans on their books until they matured or were refinanced (or were sold to one of the agencies). The early 1980s saw the development of mortgage pass-through and pay-through securities, which attracted the attention of the capital markets, but which possessed inherent limitations.

A significant breakthrough occurred with the development of the collateralized mortgage obligation (CMO) in the early 1980s. Mid-1980s' legislation provided for the creation of even more esoteric securities, and IOs (Interest-Only mortgage securities) and POs (Principal-Only mortgage securities) became part of the capital markets lexicon, together with acronyms such as REMIC. One could quickly get lost in the detail; the result, however, has been to provide a way to access public capital to fund mortgage loans that has resulted in an explosion in the availability of such instruments. It has, in fact, proved a felicitous development for both investors and consumers – providing consumers with a pool of capital that would not otherwise have been available (and whose absence would, almost certainly, have resulted in considerably higher interest rates as scarce bank capital was rationed among interested borrowers), while providing investors with one of the safest fixed-income security classes – at least in terms of security of principal (if not in certainty of maturity) – in which to invest.

Figure 17: Secondary Mortgage Market, 1980-2000



Sources: Department of Housing and Urban Development; GNMA; Freddie Mac; Fannie Mae Economics estimates.

The advantages for investors are important, but it is the existence of today's vibrant secondary mortgage market that gives U.S. homebuyers such an advantage over most others in the world. As a recent (admittedly self-congratulatory) advertisement by Freddie Mac pointed out, "In America, you can buy a home with as little as 3% down. In Germany, it's typically 35 to 40%. And 50% in Japan. In America, your mortgage payments can be stretched out over 30 years. In France, it's more like 15." And, of course, a homeowner can move between fixed- and variable-rate financing, as previously noted, relatively effortlessly – and with no financial penalties. Without the pool of capital available from the public capital markets, these advantages for consumers would be considerably less – if, indeed, they existed at all.

Not only have these changes in the mortgage market expanded home purchase and finance opportunities for consumers, but they have, concurrently, provided opportunities for homebuilders. Beginning in the late 1970s, a number of large homebuilders began to offer mortgages to their homebuyers. This provided them an important marketing tool, since they could pre-qualify buyers who were

interested in units – thereby (if the moon and stars aligned) allowing them to go to contract with a buyer at the time that family (or individual) visited their subdivision.

Today, many of the builders that initially utilized pay-through bonds still have their own mortgage subsidiaries – but their entire mortgage businesses are often managed by a third party for a split of the profits on that activity. And, even with the internet and the advent of broadly available mortgage-rate and -term information that was scarcely imagined 20 years ago, mortgage origination capability has proved to be an important distinguishing characteristic for large U.S. homebuilders.

Other Important Influences

The changing physical structure and amenities available in the home, the evolving homebuying consumer, and the revolutionary changes witnessed in the mortgage supply environment have each provided opportunities for homebuilders. However, with the exception of some of the capabilities that have resulted from changes in the mortgage market, large and small builders have been affected by these developments in much the same way, giving neither a particular advantage over the other – or over their mid-sized competitors. There are, however, several other factors that provide such a discernable advantage – and the effects have been startling.

- **Equity Capital Markets.** In 1950, there were no public homebuilding companies in the United States, although several homebuilders that are currently among today's largest were founded around that time. Nor, in the 1960s (or even the early 1970s) was the access to equity capital provided by the public markets particularly inviting to builders. There were publicly listed homebuilding companies – among them Centex Corporation, Kaufman and Broad, Lennar, Ryan Homes, and U.S. Home, to name a few – but being public was not a particularly important factor in facilitating their ability to grow and secure business.

Expansion capital was quite often readily available from typical financial intermediaries, including both banks and thrift institutions, and the leverage ratios that were allowed were generous. [I can recall instances of 1.2:1 – whereby a builder could borrow up to 20% *more* than was needed to pay for all raw materials, including land, sticks and bricks, labor, etc., yet where these represented the only collateral.] Even a number of the publicly quoted homebuilders often exhibited extremely high financial leverage, with debt in the

early 1970s sometimes as high as eight-to-ten times shareholders' equity.

The S&L debacle, prompting as it did the sharp eye cast by the Fed and bank examiners on the loan criteria and portfolio balances of all lending institutions, meaningfully changed builders' needs for equity capital. In the last substantial downturn, approximately a decade ago, the overall (and unusually severe) credit crunch bit builders and developers more painfully than most other borrowers. It was not uncommon for lenders to withdraw long-standing lines of credit for builders when those lines came up for renewal as one way of reducing their real estate exposure – the latter undertaking (if not this mechanism for accomplishing it) deemed essential by banking regulators.

Finance plays a critical role in all aspects of homebuilding – from land purchase to land development to construction to ensuring permanent takeout financing for buyers. With the exception of home sales, for which credit availability rests on the purchaser's balance sheet and cash flow generating ability, the key to maintaining and growing unit activity is a rock-solid equity base.

Builders with the capital to execute large land purchases, as well as with the financial strength to ride out the inevitable entitlement-related delays, are immensely better positioned than medium-sized builders whose capital pools are considerably smaller – and who must often appeal, on a project-by-project basis, to external capital pools which *may* (depending on their *own* criteria) provide project financing.

Not only is project financing invariably expensive, it is almost always far more cumbersome to obtain (and time is frequently of the essence in locking up particularly well-located land parcels). Finally, project finance is almost never available for extremely long-lived projects (or, stated a different way, projects which the builder in question would require more than three-to-five years to build out). This is another advantage enjoyed by larger builders, for their greater size provides incremental lot absorption capacity, while their capital base also allows them to acquire now and, after entitlements are received (enhancing substantially the value of the property), sell off a portion of the tract in order to build out (and, hence, more quickly monetize) the balance.

Today, access to public equity is an undeniable advantage for the larger builders able to tap it. Those that have raised new capital in this way from time to time and built their companies to a world-class scale have been able to continue expanding aggressively as land availability has become more constrained and as other problems have required the commitment of ever-larger pools of capital in order to advance the business at the same pace as in the past. Such builders also have a “currency” that can be used to grow their businesses through combinations – an undertaking that has been employed with increased frequency during the last five years. It is not surprising, then, that the five largest homebuilders today have each delivered approximately 20,000 homes in the last 12 months – and are on record as determined to continue expanding at a brisk pace, even in the face of flat or modestly declining housing activity.

- **Technology.** One of the common axioms when I began working with builders 25 years ago – and one that remained true for more than a decade – was that builders that reached the 10,000-unit production level invariably suffered a serious financial crisis. The reason this perception developed was quite simple.

Homebuilding is, in essence, a local business. There are many common elements of homes in Wellesley, Dallas, Orlando and Denver – but dozens of visible and less obvious differences that can trip up a builder who wants to “export” a successful house plan from his award-winning (and fast-selling) Las Vegas community development. The obvious differences, such as exterior cladding (clapboard near Boston, brick in Dallas, concrete block with stucco in Orlando and fibrecement siding in Denver), are only the beginning. A savvy builder can shop the competition and copy the external details that appear to sell best in a new market.

However, it takes a much deeper market knowledge to correctly price land in an outstanding school district compared with land only two blocks away – but in another school district. Likewise, understanding the nuances (and constraints) of water districts – at least in some parts of the country – can be daunting, but critical. Then there are the soil condition problems that can develop in some areas, buried pipelines in others – and just the difficulty of developing a network which will allow a builder to be among the first to hear about land coming up for sale (without having to pay dearly – by overpaying so consistently that he ensures he will receive the “drunken sailor” call – for the privilege). The best builders will confess that, even when the wind is at their backs

(much less when it is not), they lose money for about two years when they enter a new market on a *de novo* basis.

In order to reach the 10,000-unit level, even in a robust housing environment, a builder is either forced to account for an enormous percentage of the homes delivered in one or two markets (thereby increasing the company's specific risk to an inordinate degree) or it is required to operate in a substantial number of relatively far-flung markets. And, until recently, the latter created serious span-of-control problems.

Technology has changed this situation. Good internal control systems exist that allow homebuilding to continue to be managed as the local business that it is – but monitored daily (or hourly, should a corporate team so desire) for the timely delivery of units, scheduling, cost variations and a wide range of other potential problems which, in the past, sometimes brought down the process. These systems, operative for about the last decade, are little more than tested production planning techniques that have been applied in other manufacturing sectors for years – but which have more recently been adapted for the unusual “ever-moving factory” requirements of the homebuilding sector. These capabilities go a long way toward explaining the combination of record unit production and record margins concurrently being reported by some of the nation's largest builders.

The *real* opportunity remains to be seized, however, for the homebuilding industry has only begun to tap the enhanced capabilities associated with technology. For example, few builders would contest the statement that materials ordering is still handled in a highly decentralized manner, allowing for little savings associated with economies-of-scale purchasing. Yet, builders constructing 20,000 homes annually (or, for that matter, even half that number) obviously present attractive customers to a number of their key suppliers.

B-2-C marketing presents opportunities, as well, that are only beginning to be realized by homebuilders. When an urban Detroit builder finds that almost half of his buyers have visited his website before they visit his model homes – and that they come armed with printouts of the site's contents and questions formulated based on information obtained from that source – it provides a glimpse of the myriad ways that this technology can allow the most effective builders to entice new customers and, equally important, increase

their conversion rates when well-informed prospective buyers visit their communities.

Managements are also far from blind to the potential held by the adoption of materially more sophisticated enterprise resource planning systems, and they well recognize the fact that the expenses required to fully realize such opportunities will preclude their use by more than a handful of their larger competitors. Thus, it is not surprising that a number of recent announcements have been made which speak to this matter – as well as to capturing a share of the profits associated with “the last mile” when wiring homes for telecommunication, cable, and even electrical and related services. Relatively conservative estimates that I have seen suggest that, by more aggressively utilizing the technology currently available but not yet installed and operative, homebuilders’ margins can be enhanced by as much as 300 basis points – and possibly considerably more.

None of the foregoing incorporates the opportunities presented by building-sector-focused B2B ventures launched in the last two years. As in every other major sector of the economy, most are likely destined to disappear for want of capital, management, direction or any number of other essential inputs. However, a number of those currently finding their sea legs are extremely well-funded – either because they had already tapped the public equity markets before investors became increasingly discriminating, or because they have built a war chest with help from venture capital investors. Some *will* work, and none of us can yet grasp all of the potential consequences that a fully realized B2B capability will mean for the industry.

Smart Growth/NIMBY. Earlier in this presentation I alluded to the Smart Growth/Slow Growth/Not-in-my-Back-Yard movements that are lengthening entitlement processes for all homebuilders. Not only is this an emotionally and politically charged topic, however, it is one with important economic implications as well. These take several forms.

First, and most obviously – particularly to prospective homebuyers – these initiatives reduce choice and add to the cost of those units that are available. This is most evident, and noncontroversial – at least in terms of the validity of the assertion – in instances where local residents are restricting growth “to maintain quality of life.” Whether this takes the form of one-acre lot minimums in Loudon

County, Virginia or detailed home size, materials, etc. criteria in parts of Orange County, California, the result is a more expensive (and, hence, less affordable) unit.

The same result is often reached, however, when city/regional planners determine that denser is better, at least when it comes to housing. Portland, Oregon, often hailed by both supporters and critics as emblematic of this sort of forced concentration, saw median home prices rise by 50% more than the national average during the last five years as these regulations reduced affordability. Ironically, increasing the production of affordable units is one of the program's objectives.

Both "smart growth" and NIMBY initiatives also lengthen the land-development process, and in so doing place more stress on a builder-developer's financial strength. As a result, one cannot overstate the importance that a substantial capital base is likely to provide in dealing with Slow Growth initiatives during the next 10 years. As the July 2000 issue of *BUILDER* described in its cover story, "Some call this a transition time for home builders. Others say that the worst is yet to come. It all adds up to more – more opposition to new development, more time spent waiting for approvals, . . ."

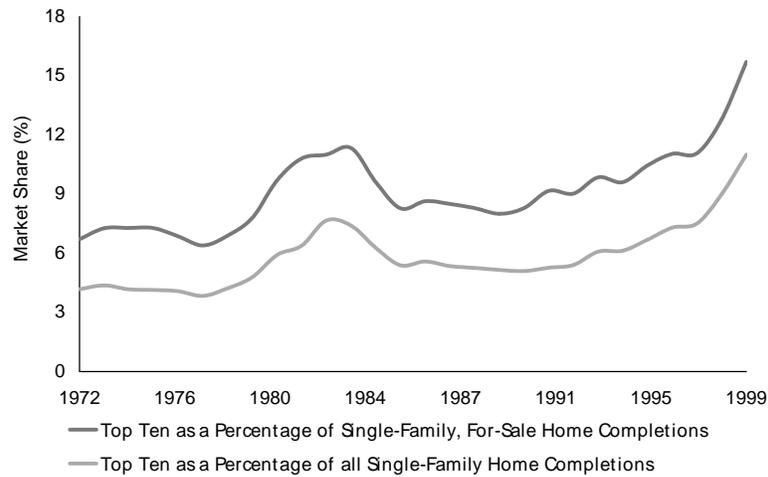
Result: For Homebuilders, Bigger *is* Better

Changes that have been occurring in the last several decades – but which have gathered momentum in the last 10 years – argue strongly for the emergence of a group of “superbuilders” who will continue to take share from many of today’s mid-sized builders. Simplistically, the result, at least in major markets, is likely to be a bifurcation of the market, with small custom builders continuing to flourish, while large builders take the dominant share of the subdivision-built, entry-level and first- and second-time trade-up single-family activity.

Smaller markets may witness a similar phenomenon, but the opportunities they present for larger builders – contrasted with those available in the 50 or so largest homebuilding markets – virtually guarantee that they will not be the principal focus of such market share growth efforts for at least the next several years. There are also a handful of anomalous large markets – Atlanta comes to mind – where builders have historically been relatively uninvolved in land development and where the combination of low development costs and minimal entitlement requirements have meant that smaller parcels of developed lots are typically readily available to large- and mid-sized builders alike. Such markets are unlikely to be among the first to see further consolidation, although the cost savings that technology may hold could eventually shift the balance of power in these markets as well.

Figure 18: Market Share of the 10 Largest U.S. Homebuilders, 1972-1999

Market Share of the Ten Largest US Homebuilders, 1972 – 1999



Sources: US Department of Commerce, Bureau of the Census; *Professional Builder*, and UBS Warburg calculations.

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Sources: US Department of Commerce, Bureau of the Census; *Professional Builder*; and UBS Warburg calculations.

Conventional wisdom historically dictated that major builders saw their market shares rise during housing downturns (when their greater financial strength allowed them to remain active longer than their smaller competitors), but saw it contract in expansions (when financing was readily available to all comers). This paradigm began to shift in the 1990s, and, from my perspective, change appears likely to continue – possibly at an accelerated pace – during the current decade.

The foregoing chart depicts the unit deliveries of the 10 largest builders both as a percentage of single-family housing completions and as a percentage of single-family, for-sale completions. Since the numerators of both series are the same in any given year, the difference between the two lies in the denominator – and that difference is the exclusion of all homes that were never “for sale” (principally those built to the owner’s specifications and those built as rental units). Although some production homebuilders engage in limited on-owner’s-lot construction, and some very small builders are in the “for sale” business, one can most easily (if with less than total accuracy) describe the higher series as showing the Top 10’s share of the medium- and large-builder market, while the lower one portrays its

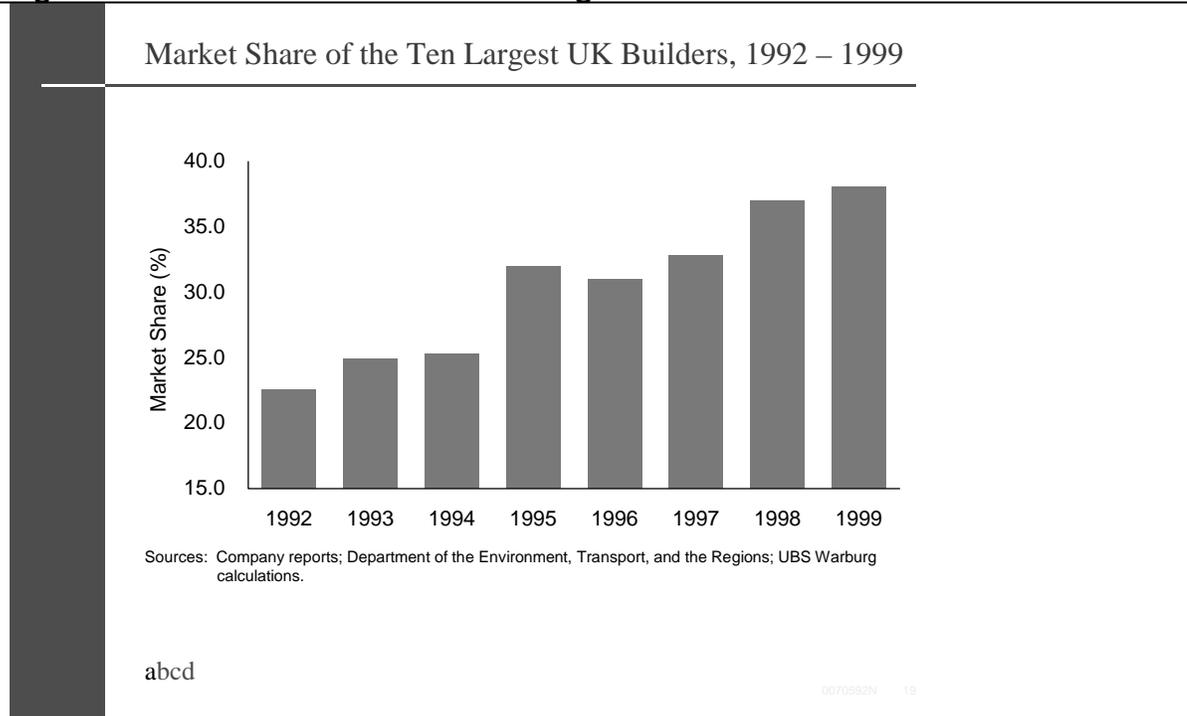
share of all single-family activity. When viewed in this manner, one must conclude that recent substantial market share gains by the Top 10 have come largely at the expense of their mid-sized adversaries.

Technology is certainly one key to this shift, for it offers major builders the opportunity to garner an extra several hundred basis points in margin. Obviously, builders can elect to enhance their own returns by this amount, but it is even more likely, in my opinion, that this extremely competitive industry will see them choose to effectively “split” the savings with homebuyers – thereby providing product that is better-priced than their competitors can offer, but which provides their shareholders with higher-than-historical returns on invested capital.

Additionally, growth controls in most markets play to the strengths of larger builders because of these companies’ ability to control very large parcels of land for extended periods of time, when such control is necessary in order to maintain a dominant position.

There are few markets in the United States where the largest homebuilder has even a 15% share of single-family activity – and no builder operates in even 40 of the 50 largest markets. Phrased differently, small- and medium-sized builders remain the norm, even if their share is shrinking. Contrast the situation in the U.S. with England, where entitlements have taken longer to obtain for more than a decade, and where the result has been higher margins – and higher market shares – for many of the larger, more sophisticated sector participants.

Figure 19: Market Share of the 10 Largest U.K. Builders, 1992-1999



Sources: Company reports; Department of the Environment, Transport, and the Regions; UBS Warburg calculations.

In 1999, the average U.K. homebuyer paid £84,963 (approximately \$128,000) for a home which included an average 1,100 square feet and was likely to be described as semi-attached (what we would refer to as a two-family home). Construction methods differ between the countries, for the timber-frame construction common in the U.S. is viewed in most parts of England as a clearly temporary product (however much one may point to homes on this side of the Atlantic that are in fine shape after 250 years or more). Fit and finish are also, typically, different on the average home in each country – with new, comparably priced U.K. production houses suffering (at least to my North American eyes) by contrast. Still, the cost per square foot – at \$117 – is 34% higher than in the U.S.

Part of the reason for the higher prices in England is the smart growth/second-use/infill/brownfield constraint mentioned earlier – magnified to many times its current presence in the U.S. Another is the far longer entitlement periods – not uncommonly well over five (and sometimes as long as 10) years. These have led to (among other results) larger, better-capitalized builders with larger market shares. It is

not difficult to envisage a repetition of this market share concentration in the U.S. as these factors become an increasingly pervasive part of the American building environment.

The value per square foot provided by U.S. homebuilders is impressive, and competition suggests that it will remain so. Yet, I believe that it is highly probable that changes in capital markets, growth initiatives (which are largely local in character), technology and a variety of the other factors that I have discussed mean that homebuilding will continue to consolidate in the United States – providing even better homes at even better values for customers – in the years ahead.

Conclusions

The last 50 years have witnessed the emergence of a homebuilding industry in the United States capable of regularly delivering 1.5 million new homes annually – and frequently 25%-50% more – to a population whose home sizes and amenities during this period have expanded to reflect their increased living standards. The homebuilding industry has benefited significantly from changes in the mortgage finance system that, in 1950, were unimagined, but which, in total, have, increased the range of financing instruments available to prospective buyers – and, even more significantly, increased the capital sources to fund these loans.

A variety of factors, ranging from the cost of implementing state-of-the-art management and ordering systems to materially longer and more complex land entitlement processes, have emerged during the last decade that provide a discernible competitive advantage to the largest, best-managed and best-capitalized homebuilders at the expense (at least from a market share standpoint) of the under-capitalized and/or mid-sized builders who compete against them in the 50 or so largest metropolitan markets. The result, during the last five years, has been market share growth for the industry's giants, and while their market shares, in aggregate, still fall well below those of the U.K.'s largest builders, many of the factors that propelled the latter's consolidation appear likely to effect the same sort of change (albeit perhaps not to the same, quite remarkably large, extent) in the United States during the next decade.

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