the evolving home building industry & implications for consumers

Joint Center for Housing Studies of Harvard University 2006

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Summary

Over the past 15 years, builder consolidation has dramatically changed the home building industry. In addition to improved financial performance, the adoption of innovative practices related to product distribution and assembly has improved the operational performance of large builders along such dimensions as construction cycle time and customer satisfaction. In generating these efficiencies, builders have helped to streamline processes throughout the entire industry.

Home buyers have also benefited. More efficient builder operations have kept construction costs (net of land) low and customer satisfaction levels high, allowing builders to offer more model home options and product choices without corresponding increases in prices. In addition, greater efficiency has enabled builders to pre-sell more homes, which in turn has reduced the risk of overbuilding. By keeping supply in line with demand, home builders have helped to bring greater stability to house prices, since overbuilding has historically been a principal cause of house price declines.

Whether these improvements will continue as market conditions change remains to be seen. One encouraging sign is that operating efficiencies (as opposed to financial performance) have increased most in more competitive markets. If the housing market weakens in the years ahead and competition increases, larger builders still have the potential to improve their operations and maintain their strong financial performance.

The Home Building Industry Today

Home building continues to set new records, with nearly 17 million new conventional homes added over the past decade. In 2005 alone, single-family starts exceeded 1.7 million—far and away the largest number ever. Thanks to a stable economy and low mortgage interest rates, the home building industry has not seen a significant downturn since the early 1990s.

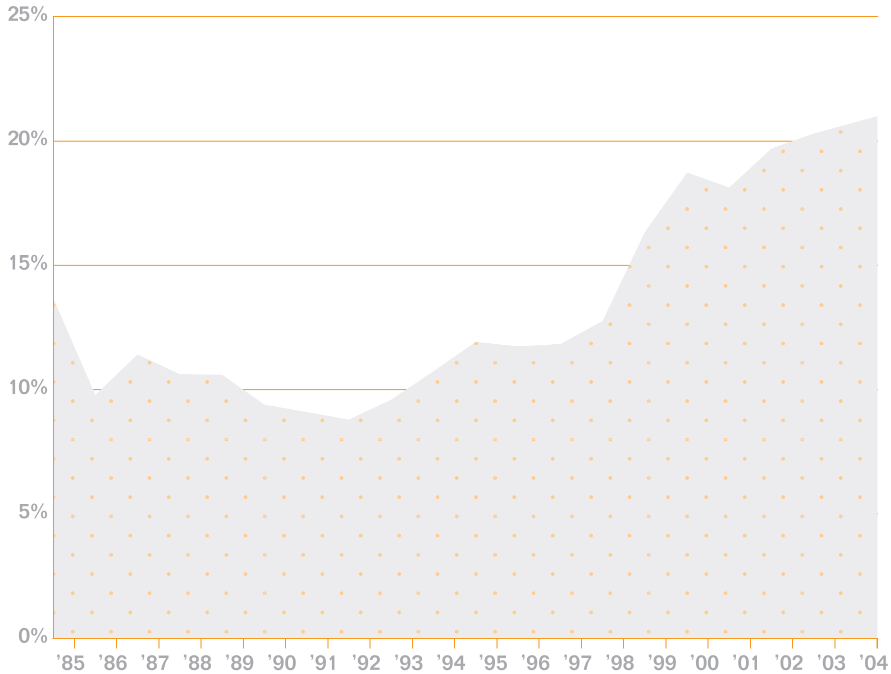
Growth in Scale

This unprecedented stretch of strong, stable growth has ushered in a period of prosperity for major builders and supported a wave of mergers and acquisitions within the industry. As a result, a small cadre of national builders has come to dominate residential construction. In the early 1990s, the top 10 builders in the country accounted for less than 10 percent of all conventional new single-family home sales. By 2004, their share had risen to over 20 percent (Figure 1). In most major metropolitan areas, larger builders hold an even greater market share.

FIGURE 1

Consolidation Has Accelerated Since the Mid-1990s

Share of new homes sold by top 10 U.S. home builders.



Source: Joint Center tabulations of **Builder** Magazine's "Builder 100."

There are at least three reasons for the dramatic increase in scale among home builders over this period, including changes in:

1. **Access to capital.** After World War II, the savings and loan industry was the principal source of capital for the home building industry. With the collapse of many of these institutions in the late 1980s, builders had to turn to other sources of financing. While Wall Street investment banks and private equity funds have stepped in to fill the void, these funding sources look for scale in builder operations.

2. **Land use regulation.** More and more communities are restricting residential development in an effort to manage growth. As a result, the development process in many locations takes longer than it once did, with land assembly and entitlement typically more complex and costly. This again creates a premium for scale of operations, since smaller builders often lack the resources to work with local officials over extended periods to secure the necessary approvals.

3. **Economic environment.** A third factor favoring larger-scale builders is the strong economic environment for home construction over the past 15 years. Stable growth and low mortgage interest rates have prevented a major recession in the home building industry since 1991. Indeed, housing starts have dipped only modestly just three times since that year.

Performance and Efficiency Gains

This combination of market conditions has produced stunning increases in top-line growth and bottom-line financial performance for large home building companies. Between 1999 and 2004, builders of 500 units or more each year realized inflation-adjusted revenue growth of 135 percent. In addition, their gross margins on homes sold and net income each increased about 4.5 percentage points (Figure 2).

With industry consolidation have come new opportunities. To leverage their scale, larger builders have incentives to reinvest in their operations by adding information systems for estimating, scheduling, and purchasing, or investing in panel plants to save time and costs in the construction process.

With such investments, larger builders continue to improve their operating performance relative to smaller builders. Better performance encourages even more builder consolidation, which in turn produces even greater scale economies, creates more incentives for investments to leverage these opportunities, and so on. This "virtuous circle" implies further consolidation and greater efficiency in the home building industry in the years ahead (Figure 3).

FIGURE 2

Corporate Revenue and Profits Have Soared in the Last Five Years

Averages across builders surveyed

	1999	2004
Gross Margin (%)	19.6	24.0
Net Income (%)	8.0	12.6
Home Sales (units)	3,660	6,909
Company Revenue (Millions of 2004 $)	864	2,038

Note: Gross margins and net income weighted by 2004 home sales.
Source: Harvard Distribution Study, Corporate Survey.

FIGURE 3

From Consolidation to Innovation to Performance: A Virtuous Circle

Source: Harvard Distribution Study.

Changes in Builder Operations

The emergence of large national production builders has dramatically altered relationships within the residential construction industry. But has their unmatched financial performance translated into more efficient operations? Has consolidation benefited the overall residential construction sector? And what impact have these changes had on home buyers?

The Harvard Distribution Study

To look at these issues more closely, the Joint Center for Housing Studies drew upon results from its recent survey of major U.S. home builders. This project, conducted with the Harvard Center for Textile and Apparel Research through their Sloan Foundation activities, and supported by Masco Corporation, is known as the Harvard Distribution Study.

Survey respondents were among the country's top 150 or so builders that reported closings of 500 or more single-family homes in 2004. The sampling frame ensures adequate coverage of not only "national" producers (defined as building 2,500 or more homes a year), but also "regional" companies (defined as building 500 to 2,500 homes a year). Each respondent provided information on corporate objectives and strategies, and on operations at the division level.

Overall, the survey response rate exceeded 50 percent, with almost two-thirds of builders with sales of 2,500 or more homes participating. Given the growing prominence of these national companies, respondents accounted for over 60 percent of homes constructed by large builders, and almost one-quarter of all new single-family homes sold in 2004.

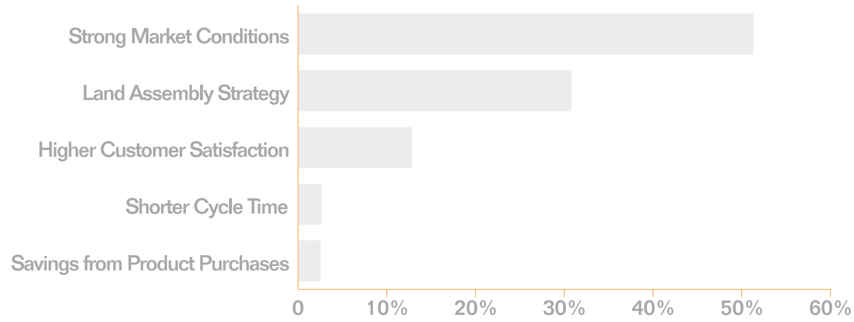
Sources of Success

When asked to name the single most important reason for their recent financial performance, over half of the corporate-level survey respondents attributed their success to strong housing market fundamentals, and nearly a third cited their land assembly strategies. Another 13 percent considered improved customer satisfaction the key to profitability. In sharp contrast, few respondents attributed their success to shorter construction cycles, savings on product purchases and on-site construction costs, and other operational efficiencies (Figure 4).

FIGURE 4

Builders View Strong Markets and Land Strategy as Key to Recent Profitability

Percent of respondents indicating most important to profitability over past five years



Source: Harvard Distribution Study, Corporate Survey.

FIGURE 5

Operating Outcomes for National Builders Have Shown Significant Improvement

2004 division averages for trade-up homes

	National Builders		Regional Builders	
	1999	2004	1999	2004
Cycle Time (days)	130.6	126.1	93.6	119.7
Cost per Sq. Ft. (2004 dollars)	50.80	54.40	55.70	60.00
Customer Satisfaction (% willing to recommend)	79.8	88.1	75.3	86.7

Notes: National builders defined as having 2,500 or more closings in 2004.
Regional builders defined as having 500 to 2,500 closings.
Source: Harvard Distribution Study, Division Survey.

Still, evidence of operational improvements does exist, particularly within the divisions of national builders. Although their homes have become bigger and have incorporated higher-quality materials in recent years, national builders have been able to shave almost five days off their construction cycle time, keep cost increases at modest levels, and significantly improve customer satisfaction scores (Figure 5). Local divisions of regional builders have been less successful in improving the efficiency of their operations.

Innovative Operating Practices

Improvements in home building efficiency typically result from implementing innovative operating practices. The Harvard Distribution Study identifies four general types of practices that larger builders have used to their advantage.

1. **Coordination with subcontractors.** Subcontractors typically purchase the materials used in home building, making payments to contractors a major expense category for builders. Innovative builder practices in this area include such initiatives as making scheduling information easily accessible to subs, automatically notifying subs of schedule changes, and frequently updating the job site production schedule.

2. **Component preassembly.** Preassembling major components such as roof trusses allows greater precision in manufacturing and often provides cost savings by substituting semi-skilled off-site labor for skilled on-site labor. The preassembly process is also more efficient when done off-site, thereby creating the potential for shorter construction cycle time.

3. **Supplier installation.** In many product categories, builders have begun to purchase installation services from the manufacturers or distributors. Supplier installation helps to limit product disputes over the source of any problems. In addition, this practice can reduce construction labor needs since product manufacturers and distributors typically serve broader geographic areas than subcontractors.

4. **Supply chain management.** Supply chain management covers a broad range of practices from price negotiations for products and value-added services to the implementation of information systems to support purchasing and inventory management. Supply chain management is an area where scale economies give larger builders an obvious edge over their smaller competitors.

Innovative operating practices help large builders not only run their operations more efficiently and use their market power more effectively, but also better manage risk. For example, builders have reduced their exposure by controlling more land through options, joint ventures, and other approaches that keep land costs off their books until they buy the entitled lots. In this way, builders only incur these expenses close to the time of construction.

More important, however, is their ability to reduce the share of homes they build on a speculative basis. With more efficient operations and better management controls, large builders typically do not begin construction until a home is pre-sold. Across builders surveyed, 73 percent of all homes closed in 2004 were sold before construction began, an increase from 70 percent in 1999. National builders pre-sold over three-quarters of homes closed in 2004, while regional builders pre-sold about two-thirds.

Local Market Conditions Matter

Larger builders have incentives to adopt innovative operating practices because they have the market power to implement these efficiencies and can leverage the benefits across a broader range of operating divisions. The financial payback for these improvements, however, depends greatly on conditions in the local market. Land use restrictions, procedures for entitling undeveloped land for construction, and other factors that boost house prices directly affect the competitive playing field. The dominant presence of other large builders in the market also changes the potential for profitability.

Development Restrictions and Builder Performance

In communities where demand is strong but residential development opportunities are limited, house price appreciation tends to be high. For example, among the areas covered by the Harvard Distribution Study, house prices in development-restricted markets such as Sacramento, Los Angeles, Miami, and Riverside, California, averaged 20 percent annual increases from 1999 to 2004. By comparison, house price appreciation in relatively unconstrained markets such as Dallas, Houston, Austin, and Salt Lake City ran near 3 to 4 percent.

In markets where price appreciation is low, land is generally more accessible and builders face fewer barriers to entry. As a result, construction activity can respond very quickly to changes in demand. As market conditions shift, however, builders can get caught with excess inventory, which drives down area-wide house prices. In these markets, builders must run their operations efficiently to remain profitable.

For example, builders of trade-up homes in Dallas, a typical low-appreciation market, reported construction cycle times that were more than six days shorter, per square foot construction costs that were $13.50 lower, and customer satisfaction levels that were 18 percentage points higher (90.7 percent vs. 72.7 percent) than builders in Sacramento, a typical high-appreciation market.

In high-appreciation markets, demand for new homes is generally greater than the number of homes that can be added under existing land use and building regulations. This limits the risk of rapid overbuilding. Given that it takes more time and resources to build in these markets, higher barriers to entry and higher land costs push up the average price of homes sold. Builders working in these communities generally put a premium on their land acquisition and development strategy. Since they are often able to achieve higher margins on homes sold in these markets, they may put less emphasis on operational efficiencies (Figure 6).

FIGURE 6

Builders in High-Appreciation Markets Focus on Higher-Priced Homes that Generate Larger Margins

2004 division averages for trade-up homes in bottom and top appreciation markets

	Bottom Third of Markets	Top Third of Markets
Cycle Time (days)	105.7	117.7
Cost per Sq. Ft. ($)	54.90	53.50
Customer Satisfaction (%)	91.4	81.3
Gross Margin (%)	20.3	27.5
Net Income (%)	9.3	21.7
Land Owned or Optioned (years)	4.3	6.7
Average House Price ($)	211,500	405,400

Note: The bottom third of marrkets averaged 25 percent appreciation in 1999–2004. The top third of markets averaged 102 percent appreciation.
Source: Harvard Distribution Study, Division Survey.

Again comparing high- and low-price appreciation markets, builders in Sacramento on average controlled over two years more land for future production than builders in Dallas. The average prices of homes sold in Sacramento were two-and-one-half times as high. Most notably, the average gross margin on homes sold by Sacramento builders (26.8 percent) was almost twice that among Dallas builders (14.3 percent).

The Competitive Playing Field

Another factor that appears to influence operating performance is the degree of market concentration. In some metros covered by the Harvard Distribution Study, the top five builders have only a modest market share. For example, Hanley Wood Market Intelligence reports that Atlanta, Los Angeles, and Riverside, California are housing markets where the top five builders account for a maximum of 20 percent of new homes sold.

FIGURE 7

Builders Tend to Compete on Price in Fragmented Markets and on Choice in Concentrated Markets

2004 division averages for trade-up homes

	Fragmented Markets	Concentrated Markets
Cycle Time (days)	112.1	113.9
Cost per Sq. Ft. ($)	49.00	55.40
Number of Models	4.7	10.2
Average House Price ($)	318,200	319,100

Note: Average share of 2004 sales for top five builders was 22 percent in fragmented markets and 42 percent in concentrated markets.
Source: Harvard Distribution Study, Division Survey.

Since there are no dominant builders, these "fragmented" markets are usually very competitive. When competing against national builders with a higher cost structure, smaller builders with a lower cost structure can often win out on price. In fragmented markets, surveyed builder divisions report lower construction costs and marginally lower cycle times. Builders in these markets are slightly more likely to adopt innovative practices, probably because of the competitive pressures they face (Figure 7).

In "concentrated" markets, in contrast, a few builders control much of the market. Examples include Columbus, Cincinnati, Austin, and Baltimore, where the top five builders account for 45 percent or more of all new homes sold. In these metropolitan areas, competition focuses on new home choice and quality rather than price, since the major builders active in these markets are likely to have similar operating costs. Builders in concentrated markets report providing more options for home buyers (such as a larger number of models) and charge marginally higher house prices.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Home Buyer Benefits

The market conditions that have helped to create a more efficient home building industry over the past 15 years have also favored housing consumers. A more stable economy, with more muted cycles and low inflation, has produced some of the lowest long-term interest rates in a generation. Attractive interest rates, together with low unemployment, have also provided greater financial security for many households. Just as important, regional housing cycles have become milder and less frequent.

Smoother Home Price Gains

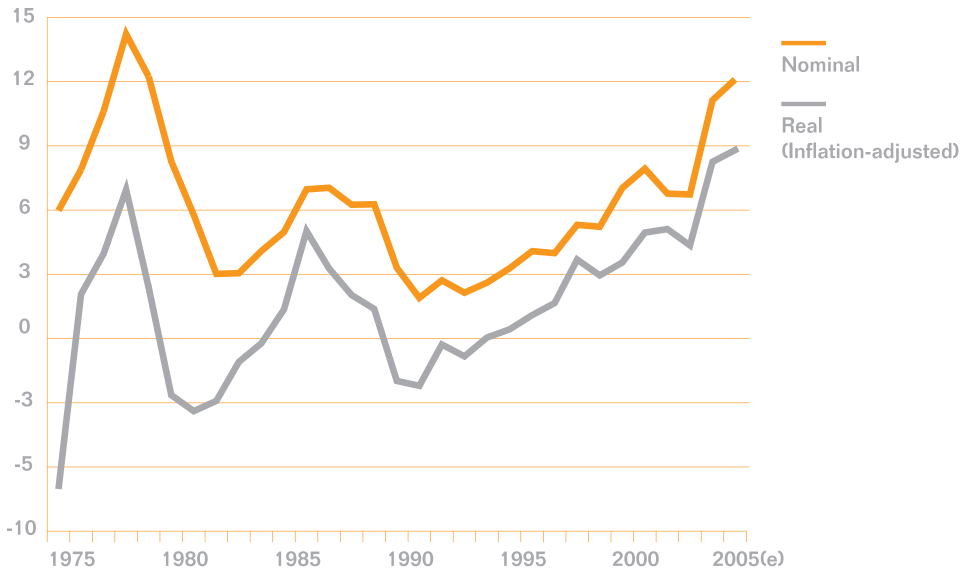
Home owners have benefited from the unprecedented strength of house prices in recent years. Nationally, house prices have risen an average of 127 percent since 1990, with nearly half of this increase coming since 2000. Even more remarkable than this total increase is the absence of a traditional boom/bust cycle.

Until recently, economic cycles interacted with housing cycles to produce tremendous volatility in home prices. From 1975 to 1993, house prices rose more slowly than overall inflation in 10 of the 19 years, or over half of the time. In each of the 12 years since 1993, however, house price appreciation has exceeded the pace of inflation (Figure 8).

FIGURE 8

Home Prices Have Become Less Volatile

Percent change in home prices (Q4 to Q4)



Source: Freddie Mac Conventional Mortgage Home Price Index.

The steady rise in house prices is even more dramatic at the metropolitan area level. During the 1980s and early 1990s, about seven metro areas would see a major drop in house prices in any given year. The number of metros experiencing price declines of five percent or more began to decrease in 1993, and not one has seen a major decline since 1995.

Stable economic growth and favorable interest rates have probably helped to smooth out house prices. But research by the Joint Center for Housing Studies indicates that overbuilding is a major cause of house price declines—even more so than a major drop in area employment. Of the major metro areas that saw sizable decreases in house prices between 1975 and 2000, almost two-thirds had experienced overbuilding. In some markets where overbuilding did occur, home prices fell even when there were no losses in employment.

With greater discipline in their operations and better monitoring of local market conditions, builders have thus helped to reduce house price volatility by keeping inventory in line with demand. Although rising land values have increased the price of new homes in many areas, stable construction costs have allowed consumers to purchase bigger and better residences in many others. Indeed, size and quality improvements account for virtually all of the increase in construction costs of homes built between 1990 and 2004.

Most of the recent rise in house prices thus reflects appreciation in the value of land, particularly in areas where residential development opportunities are limited. Indeed, a recent Federal Reserve Board study concludes that the price of residential land has increased almost 250 percent over the past three decades, while the replacement cost of homes remains virtually unchanged after adjusting for inflation (Figure 9).

More Choices for Consumers

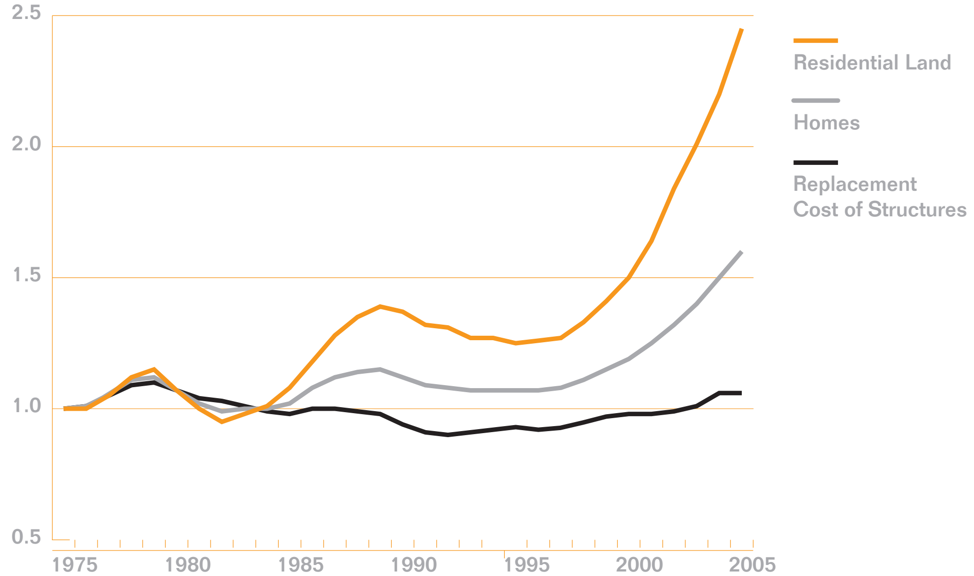
Although standardization has increased within the building industry, it has not served to reduced the housing choices that builders make available to buyers. To the contrary, builders often need to compete by offering buyers more selection in model homes, floor layouts, and product features.

In fact, large builders report that the numbers of home models and floor layouts they make available in a given market increased by about 10 to 15 percent on average between 1999 and 2004. The number of product options grew even more, with choices of appliances, cabinets, and plumbing fixtures in trade-up homes expanding between 30 percent and nearly 50 percent over this period (Figure 10).

FIGURE 9

Rising Land Prices Are Largely Responsible for Higher House Prices

Index (1975=1.0), adjusted for inflation



Source: Morris A. Davis and Jonathan Heathcote, **The Price and Quantity of Residential Land in the United States.**

FIGURE 10

Builders Are Offering Home Buyers More Options

2004 division averages for trade-up homes

	1999	2004
Number of Models	9.1	10.2
Number of Floor Layouts	6.2	7.0
Product Options		
Appliances	14.6	19.2
Kitchen/Bath Cabinets	8.1	11.9
Plumbing Fixtures	10.0	13.9

Source: Harvard Distribution Study, Corporate Survey.

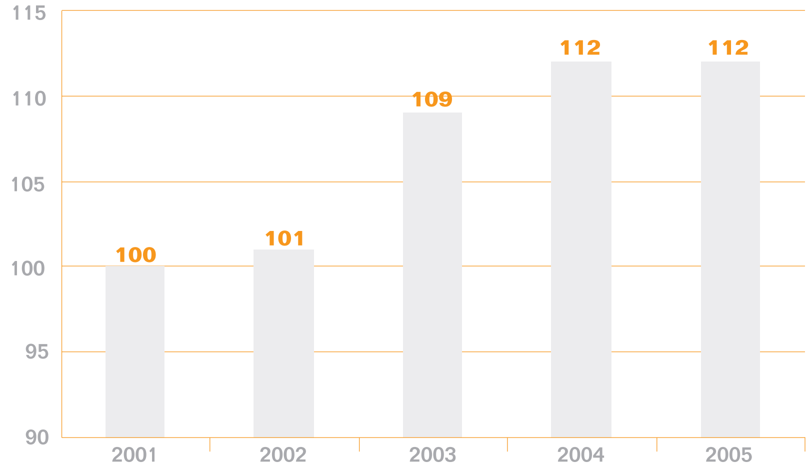
Increased selection helps the housing industry promote new products and new technologies for the home. With a wider range of product options available, owners can begin thinking about different ways to design their homes. Greater exposure to more product choices at the time of purchase also gives homeowners more awareness of their upgrade options as they settle into their homes.

With more products to choose from and builders paying closer attention to the construction process, customers are clearly more satisfied with their new homes. J.D. Power and Associates rates home builders and their operations in selected markets on such factors as customer service, home readiness, and the company's sales staff and construction manager. According to this index of overall satisfaction, the major market average rose from 100 in 2001 to 112 in 2005 as most major builders gave new priority to customer satisfaction (Figure 11).

FIGURE 11

Customer Satisfaction with Builders Has Improved Markedly

Overall satisfaction index scores, major market totals



Source: J.D. Power and Associates.

Maintaining the Momentum

If the housing market were to cool in the years ahead as most analysts predict, what would happen to builder performance? Have their operations improved enough to ensure continued financial success, or will their scale advantages and impressive profits evaporate when market conditions change?

Builders that have already adopted more innovative practices have clearly profited from their investments. New practices related to product distribution and assembly have improved the operational performance of large builders, particularly in terms of construction cycle time and customer satisfaction. In the Harvard Distribution Study, local divisions in the top third of the adoption spectrum reported average construction cycle times and costs that were almost 10 percent below those of divisions in the bottom third of the adoption spectrum.

But even high-performing builders still have the potential to make more improvements. Given that their strong financial performance has largely resulted from their leading land positions in booming housing markets, builders have not had to focus on implementing innovative practices or maximizing operational efficiencies. In fact, over two-thirds of local builder divisions surveyed had adopted less than half of the innovative practices identified in the Harvard Distribution Study.

Larger builders can especially benefit from focusing on efficiency. Local divisions of builders with closings of 10,000 homes or more in 2004 reported implementing only half of the identified innovative practices, while the divisions of builders with sales of 2,500 to 10,000 homes implemented less than 40 percent.

To be fair, there are many valid reasons why implementation has been relatively weak. The corporate offices of larger builders report above-average development of innovative procedures, but implementation at the division level has often lagged. With the spate of acquisitions in recent years, many of these divisions have only recently come under management of the acquiring builder and may thus need additional time to implement new systems and procedures. In addition, given their strong financial performance in recent years, corporate offices have less incentive to develop new procedures for their local divisions, and local divisions have less incentive to implement such changes.

Whether builders will seize these opportunities remains to be seen. One encouraging sign, however, is that operational improvements have increased the most where house price appreciation is relatively low and no one builder dominates the market. If the residential construction market weakens in the years ahead, house price appreciation is likely to slow and more builders are likely to compete within individual markets—exactly the conditions that lead to the operational improvements made in recent years.

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