

Research

Richard McLemore, CFA
Vice President
US Office
Tel 973.683.1674
richard.mclemore@prudential.com

Prudential Real Estate Investors
8 Campus Drive
Parsippany, NJ 07054
USA

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

Executive Summary

Institutional investors must increasingly consider the trends that can affect investment in industrial assets. Warehouse is the most important industrial subtype for institutional investment, but even in this large category differences exist. Changes in retailing, declines in manufacturing and advances in logistics all help determine which property characteristics and locations will be most in demand. Focusing on Strategic Markets, with selective investment in Major Markets and limited activity in Opportunistic Markets can help ensure portfolio performance.

Introduction

The industrial sector, and warehouse in particular, is one of the “bread and butter” property types for institutional real estate investment. Compared with other sectors, industrial typically offers relatively low prices per square foot, little required maintenance and capital improvements, and long-term net leases. In addition to its simplicity, the sector’s relatively high yields and stable space markets have positioned it as a core component of many institutional portfolios.

As the US economy has struggled, however, industrial real estate has been challenged. According to Torto Wheaton Research, industrial availability has been slowly rising every quarter for almost three years, despite a significant slowdown in construction, and the current 11.7% availability rate is a full 1% above the previous high. With the collapse in research and development (R&D) space demand in the West, warehouse overbuilding in the Midwest and the continued decline in manufacturing as it leaves the US, investors have become increasingly selective in their industrial property investment.

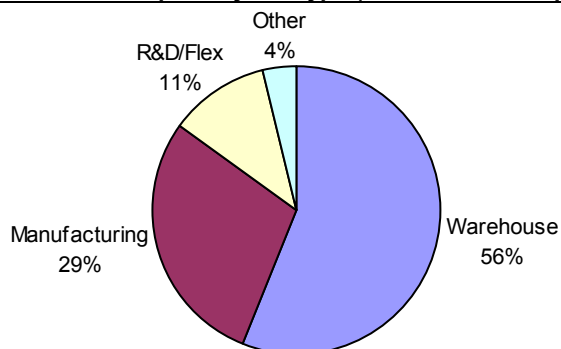
While many investors treat industrial as a relatively homogenous sector, the opposite is actually true. The sector comprises three main subtypes: warehouse, manufacturing and R&D/flex. Of these three subtypes, warehouse dominates. This often leads investors to simplify asset allocation by including all industrial subtypes in one allocation but primarily investing in warehouse. Compared to other property types, all industrial subtypes feature a relatively high degree of single-tenant occupancy, owner occupancy and long-term leases. However, across,

and even within, these subtypes very important trends in end-user demand play a critical role in determining investment success. Investors today must understand the intricacies of the industrial market and the trends influencing particular user segments, or they cannot properly structure portfolios or accurately quantify investment risks. In this report, we examine the basic characteristics of the warehouse subtype and the trends affecting it, and we propose a potential investment strategy for today’s increasingly risky market.

The Dominance of Warehouse

Industrial property can be classified into three main groups – warehouse, manufacturing and R&D/flex – based on an asset’s physical characteristics and use. Warehouse properties are for the storage and distribution of goods needed for manufacturing or consumption. Manufacturing properties are used for product assembly or for production activities. R&D/flex space is for research and initial development, or for specialized production needs, such as lab space. The warehouse subtype accounts for about 56% of total industrial space (see **Exhibit 1**). Manufacturing property accounts for 29%, while R&D/flex is only 11%. The remaining 4% encompasses niche property types, such as special use manufacturing.¹

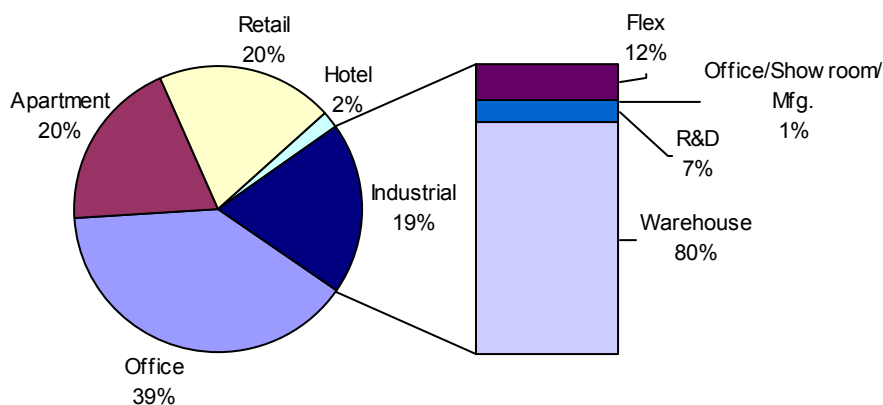
Exhibit 1: Industrial Space by Subtype (based on total sq. ft.)



Sources: Torto Wheaton Research; Prudential Real Estate Investors

Based on the composition of the NCREIF index, institutional real estate investors hold about 19% of their portfolios’ values in industrial real estate. The vast majority (80%) is concentrated in warehouses (see **Exhibit 2**). Warehouses have certain attributes that are less typical in the other industrial subtypes. For example, warehouse space is relatively standardized, at least compared with R&D/flex or manufacturing, where facilities are typically customized (at relatively high

Exhibit 2: Private Institutional Investment in Industrial Property



Sources: NCREIF Property Index, 3Q03; Prudential Real Estate Investors

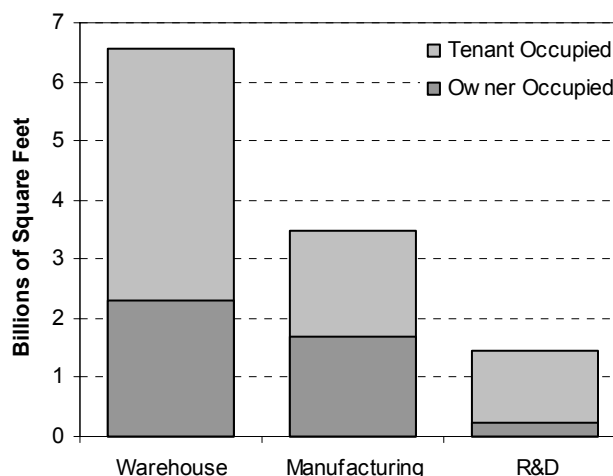
¹ Spring 2002 Industrial Outlook, Torto Wheaton Research. Ratios based on square feet.

costs) to fit tenant needs, which necessitates a higher risk premium. Warehouses are more of a commodity investment. Their fungibility and liquidity give investors a sense of security: it is less likely that a particular warehouse will become completely functionally obsolescent. However, the same homogeneity leads to higher susceptibility to market pressures. Tenants can move more easily between warehouse properties than manufacturing or R&D properties.

While the total stock of industrial real estate in the US is quite large (11.8 billion square feet, based on estimates from Torto Wheaton Research), the investable segment is noticeably smaller. More than one-third of the US industrial real estate market is owner occupied (see **Exhibit 3**). By subtype, manufacturing has the highest owner occupation (49%), and R&D has the lowest (17%). The warehouse subtype is about 35% owner occupied.

Of the portion of industrial space that is rental, a single tenant occupies more than 40% of properties.² The relatively custom nature of some industrial assets (namely manufacturing) translates into higher owner and single-tenant occupation. In most other property types, the degree of owner occupation is notably lower, and multi-tenant occupation is much more typical. These characteristics also contribute to the industrial sector's relative stability. A substantial portion of the industrial sector is not as subject to speculative development spurred by the availability of investment capital, which makes the sector less likely to exhibit short-term cyclical trends. However, the high degree of single-tenant rental occupancy makes tenant underwriting even more important in industrial than in the other property sectors. In apartments, or even office and retail, tenant credit risk is often diversified, but in industrial it is less so.

Exhibit 3: Owner Occupation by Subtype



Sources: Torto Wheaton Research; Prudential Real Estate Investors

Investment Landscape

Across the industrial property subtypes, access to transportation³ and proximity to the source of goods for production or the end users of finished goods largely determines space demand. This is particularly true for the warehouse sector. As **Exhibit 4** illustrates, the largest warehouse markets in the US are, for the most part, those on major transportation arteries and are the same as the largest markets in terms of population. The concentration close to population is also related to access to labor markets. The importance of access to labor for industrial properties is also

² Based on *Modeling the Industrial Market: Data and Methodology*, Torto Wheaton Research, 2002, and Prudential Real Estate Investor estimates.

³ For an excellent discussion of the impact of goods movement on warehousing locations see “The Path of Goods Movement,” Glenn R. Mueller and Steven P. Laposa, *Real Estate Finance*, Vol. 11, No. 2, Summer 1994, pp. 42-50.

apparent in the flight of certain manufacturing activities to Asia and Latin America, where labor costs are substantially lower.

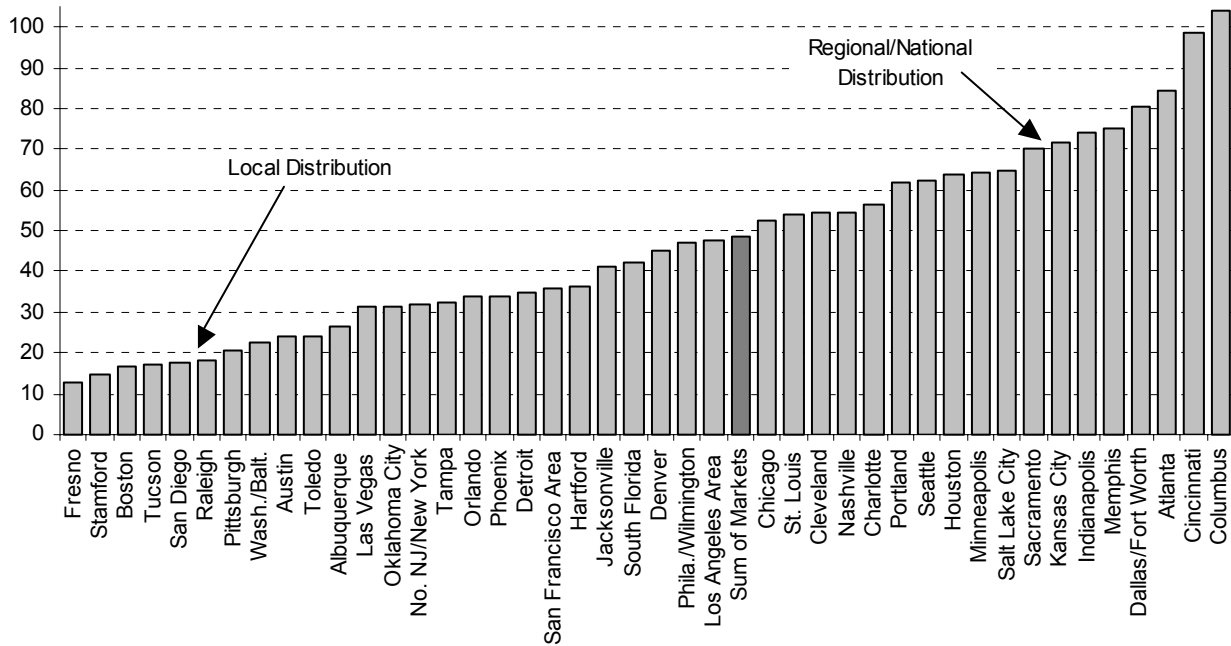
Exhibit 4: Warehouse Markets and Population

	Warehouse Space (000's sq. ft.)	Metro Population (000's)	Warehouse Bldgs.	Distribution Employees (000's)
Los Angeles Area	818,859	17,121	17,428	517
No. NJ/New York	629,354	18,915	9,306	N/A
Dallas/Fort Worth	451,710	5,601	6,551	239
Chicago	444,086	8,423	6,493	318
Atlanta	372,156	4,423	5,175	207
Houston	282,373	4,420	5,489	150
Philadelphia/Wilmington	270,884	5,732	3,471	170
South Florida	220,397	5,245	5,857	169
San Francisco Area	209,406	5,885	4,299	180
Minneapolis	197,340	3,060	3,383	120
Washington/Baltimore	174,553	7,780	2,570	177
Cincinnati	164,722	1,672	2,539	64
Columbus	163,739	1,576	1,720	60
Detroit	154,740	4,457	3,254	142
Seattle	153,238	2,465	2,926	97
St. Louis	141,841	2,631	2,564	84
Kansas City	131,467	1,831	2,120	82
Portland	126,088	2,034	2,642	77
Sacramento	125,354	1,789	2,649	33
Indianapolis	122,541	1,656	1,345	73
Cleveland	121,896	2,243	2,076	81
Phoenix	120,762	3,548	3,122	110
Denver	113,720	2,515	2,645	92
Boston	102,775	6,135	1,435	196
Charlotte	89,663	1,595	1,663	70
Salt Lake City	88,517	1,369	1,982	59
Memphis	88,000	1,171	526	55
Tampa	81,568	2,511	1,975	68
Nashville	69,186	1,270	1,095	58
Orlando	60,352	1,774	1,259	61
Las Vegas	55,391	1,769	1,381	31
San Diego	52,401	2,940	1,499	59
Jacksonville	48,271	1,170	787	41
Pittsburgh	47,698	2,341	781	70
Hartford	42,478	1,164	754	34
Oklahoma City	34,787	1,103	824	31
Austin	32,960	1,374	788	42
Raleigh	23,342	1,279	338	38
Albuquerque	19,392	736	710	22
Tucson	15,014	883	458	12
Toledo	14,886	617	187	23
Stamford	13,056	885	296	26
Fresno	12,173	968	280	20

Sources: Torto Wheaton Research; Prudential Real Estate Investors

Metropolitan areas with above-average ratios of warehouse space per capita tend to be regional or national distribution hubs. The areas with smaller ratios tend to be those where distribution activity focuses on the local market. **Exhibit 5** depicts the wide disparity in per capita warehouse space across US markets. In general, markets with above-average per capita warehouse space have access to important transportation routes that encourage distribution activity beyond the local area. For investors, the ratio, along with total stock, gives a good indication of the relative degree of warehousing activity in the markets and probable investment liquidity.

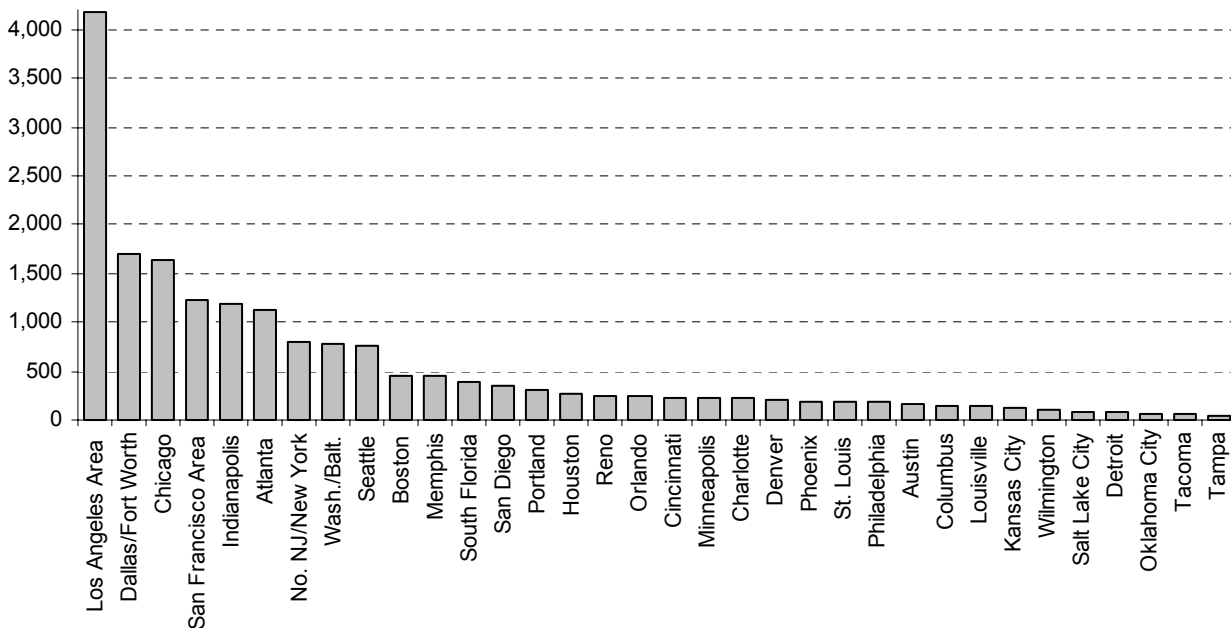
Exhibit 5: Per Capita Warehouse Space (sq. ft.)



Sources: Torto Wheaton Research; Prudential Real Estate Investors

Liquidity is also determined by the scale of institutional investment in warehouses in a metropolitan area. Areas with large bases of institutional investment in place tend to be more liquid. Not surprisingly, the amount of institutional investment in warehouses is heavily influenced by the availability of investment stock. **Exhibit 6** depicts the current concentration of

Exhibit 6: Institutional Warehouse Investment Concentration (\$M)



Sources: NCREIF; Prudential Real Estate Investors

institutional warehouse investment by metropolitan area. The largest concentration is in the Los Angeles area, which includes the city of Los Angeles, plus outlying areas that serve the city's warehousing needs, such as Orange, Ventura and Riverside counties. The second largest is the Northern New Jersey/New York area, which includes New York City and Long Island, Westchester County and counties in Northern New Jersey that typically serve New York City's warehouse needs. New York City itself has a very low stock of warehouse space but a large population, which drives down the amount of warehouse space per capita.

Three Tiers of Markets

Many strategies exist for warehouse investments, and each has merits depending on an investor's performance objectives and risk tolerance. For relatively risk-averse institutional investors, strategies today should appropriately manage risk while accounting for various trends affecting the industry. Perhaps the best risk management tool is diversification. One method of diversifying investment while maintaining appropriate levels of liquidity is through a three-tier system for classifying markets for investment allocation. Investment is concentrated in the first two tiers, which are the largest and most liquid warehouse investment markets. The final tier is reserved for more infrequent opportunistic investments.

The first tier – Los Angeles, Northern New Jersey/New York, Chicago, Dallas/Fort Worth and Atlanta – includes markets that are fundamental to any diversified US warehouse real estate investment program and are sufficiently dispersed to provide a geographic diversification benefit. Each of these markets alone offers many different types of investments, as well as a large base of investable properties. These markets benefit both from a large population to support local distribution activity and convenient access to transportation routes for regional and national distribution. Combined, these five Strategic Markets represent more than 45% of the warehouse investment universe and over 35% of the overall real estate investment universe. Thus, they also provide a high degree of investment liquidity. Based on industrial transaction volumes from Real Capital Analytics, these five markets accounted for about 43% of transaction activity during the first three quarters of 2003.⁴ Any diversified US warehouse investment portfolio would likely maintain a presence in the majority of these markets.

Major Markets include those where the portfolio can exercise discretion in determining which markets present the best opportunities. These markets typically have either large local population bases supporting local distribution activity (e.g., Boston), or have above-average access to transportation, which leads to above-average demand for distribution space (e.g., Cincinnati). The 15 Major Markets for warehouse investment include Boston, Cincinnati, Denver, Houston, Indianapolis, Memphis, Minneapolis, Philadelphia, Phoenix, Portland, San Diego, San Francisco, Seattle, South Florida and Washington/Baltimore.

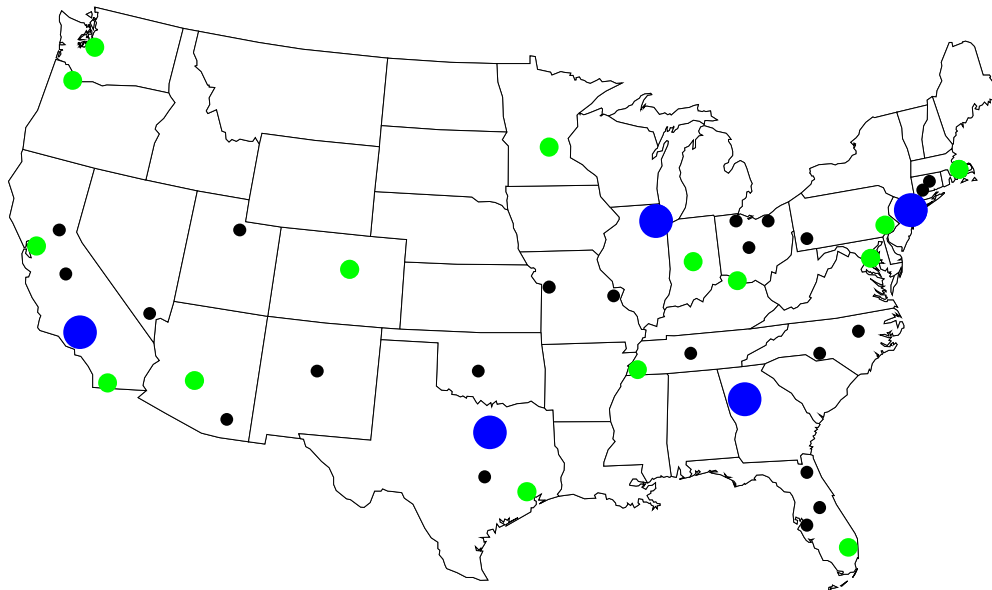
Opportunistic Markets are typically those that have relatively small populations, average or below-average access to transportation arteries and smaller stocks of investable warehouse space. Good transactions can be found in these markets, but the challenges involved with keeping a market presence often outweigh the potential opportunities. These smaller markets are also potentially more volatile, and institutional investment there is typically not high, so investment requires a return premium. In today's competitive investment market, institutions are

⁴ *Flex/Industrial Capital Trends Monthly*, October 2003, Real Capital Analytics.

increasingly considering these more risky markets in an effort to find opportunities. Unfortunately, the increased investor attention has, in many cases, caused compression in yields. It is now more difficult to find investments in opportunistic markets that provide an appropriate risk premium. Examples of such markets include Tampa, Charlotte, Columbus, St. Louis, Pittsburgh, Kansas City, Nashville, Orlando, Raleigh, Austin and Sacramento.

Exhibit 7 maps the Strategic, Major and Opportunistic Markets. Concentration in the first two should provide portfolio diversification and a relatively high degree of investment liquidity.

Exhibit 7: Three Tiers of Markets for Warehouse Investment



	Strategic 	Major 	Opportunistic 
West	Los Angeles Area	Denver Phoenix Portland San Diego San Francisco Area Seattle	Albuquerque Fresno Las Vegas Sacramento Salt Lake City Tucson
Midwest	Chicago	Cincinnati Indianapolis Minneapolis	Cleveland Columbus Kansas City St. Louis Toledo
South	Atlanta Dallas/Fort Worth	Houston Memphis South Florida	Austin Jacksonville Nashville Oklahoma City Orlando Tampa
East	No. NJ/New York	Boston Philadelphia/Wilmington Washington/Baltimore	Charlotte Hartford Pittsburgh Raleigh Stamford

Sources: Prudential Real Estate Investors; NCREIF regional definitions

Important Trends

In addition to risk management achieved through focusing investment in the Strategic and Major markets, warehouse investment strategies should consider the implications of the current market conditions and primary trends. The relatively weak warehouse market today mandates that investors be more cautious. Warehousing is changing, and investors must have a good understanding of their property's role and position in this more competitive market.

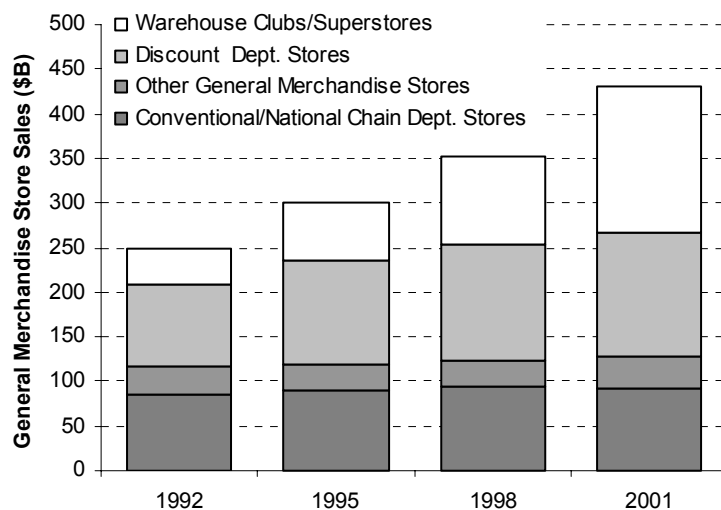
Structural changes in the US economy are influencing the warehouse investment landscape. Employment, traditionally an important indicator of warehouse demand, has been falling. Losses have been particularly acute among some of the more important consumers of warehouse space, such as manufacturers. The one sector of the economy that has shown surprising resiliency in these troubled times has been consumer spending, which offers insulation to only a limited segment of the warehouse market. The economic environment has led to transformations in several industries, and these changes heavily influence the warehouse investment market. The top trends driving these changes are the evolution of retailing; the declining domestic manufacturing industry; and advances in logistics technology. Each of these trends seems to have negative implications for warehouse space demand, which highlights the increasing importance of investment strategy for the property type and underscores the value of investment underwriting and selectivity in the sector.

Evolution of Retailing

As the US economy faltered, retail sales remained strong, but traditional department stores' sales have been stagnant. This is due to a restructuring within retailing. As **Exhibit 8** illustrates, the traditional retailing segment's sales have remained relatively flat over the last 10 years (based on total retail sales). Growth has occurred in the newer value-retailing formats, such as discount department stores, and to an even larger degree, the warehouse clubs and superstores. In 1992, the warehouse club and superstore segment represented only 16% of overall general merchandise store sales. By 2001, the ratio had more than doubled to over 38%. Traditional retailers are barely hanging on to the amount of sales they had 10 years ago. This is a very important trend for warehousing because the segments with the highest sales growth are more likely to have greater on-site inventory and, therefore, less demand for distribution space.

This restructuring in retail is not insignificant. Retailers play an important role in the warehouse market. Wal-Mart alone has more than 100 distribution facilities totaling more than 60 million square feet. According to *Warehousing Management's* 2002 list of

Exhibit 8: General Merchandise Sales Trends



Sources: US Census Bureau, May 2002; Prudential Real Estate Investors

the “Big 50” US companies with the most warehouse space, 11 retailers accounted for about 20% of total distribution space.⁵ This is most likely representative of the overall warehouse distribution universe.

The evolution of retailing has serious implications for a sizable number of warehouse tenants. Warehouse investors should be increasingly cognizant of the competitive positioning of retail tenants and the trends in the tenants’ industries. The evolution is particularly acute in general merchandise retailers, where significant restructuring and consolidation have recently occurred. Scrutiny of retail tenant credit and outlook in this environment is crucial to investment success.

Decline in the Domestic Manufacturing Industry

The US manufacturing industry is undergoing a structural transformation, in many ways similar to the change experienced by the agriculture industry around the turn of the last century. Manufacturing is decreasing in importance within the US economy. Increasingly accessible lower cost global manufacturing locations have pressured US manufacturers to relocate overseas, primarily to Asia or Latin America. In addition, increases in domestic manufacturing productivity have heightened efficiency and lowered the demand for manufacturing employment, and in some cases, facilities. In fact, since 1975, the average annual growth rate for manufacturing productivity has been almost double the 1.7% growth witnessed in the nonfarm sector as a whole.⁶ The manufacturing sector today employs roughly the same number of people as it did during WWII. The US has lost almost three million manufacturing jobs during the last five years alone, and many of these jobs are unlikely to return. Economy.com forecasts that manufacturing employment will remain stagnant at least through the next 10 years.

The impact on the industrial real estate investment market as a whole will likely be multifaceted. Tenant and industry underwriting will be increasingly important for manufacturing facilities, as tenants for these often-specialized properties may become even scarcer. Markets have already softened, and demand seems unlikely to witness a substantial rebound. Repositioning these facilities is rarely an option, given their specialized nature. The probable impact on warehousing is more difficult to ascertain. Warehouses that provide storage of basic goods used in manufacturing processes are likely to feel the same pressure as the manufacturing operations. The effects here will largely be determined by the industry in question. Warehouses in certain locations or with tenants in industries that focus on low-value-added manufacturing inputs or products are at particular risk. These operations are the primary candidates for international export. The higher risk associated with these properties should be appropriately priced in investment underwriting. The demand for the warehousing of finished goods, however, may grow because overseas production increases transit times, and additional local inventory may be necessary to meet consumer demands.

Advances in Logistics Technology

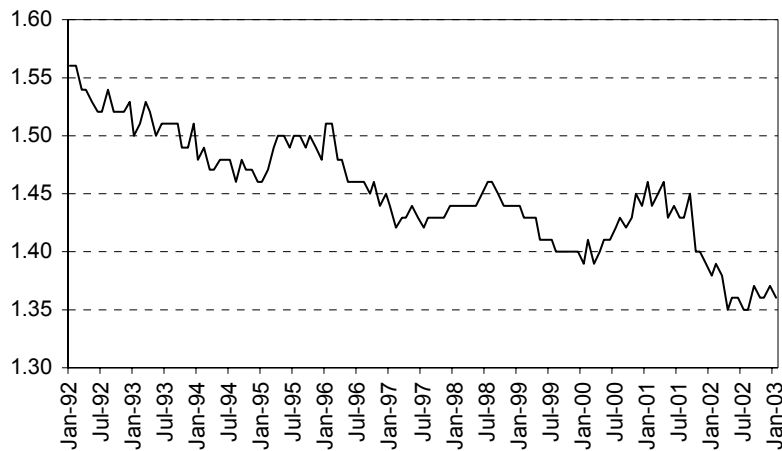
Over the last 10 years, improved technology has increased the importance of efficient logistics as a competitive advantage for firms in industries that rely heavily on inventory control. Idle inventory is a drag on a firm’s earnings. Firms try to find an optimal balance between keeping

⁵ “The Big 50,” *Warehousing Management*, October 1, 2002.

⁶ “The Disappearance of Manufacturing?” *Chicago Fed Letter*, June 2003, The Federal Reserve Bank of Chicago.

goods readily available for sale and the cost associated with this. Technology has brought about decreases in overall inventory levels as a percentage of sales, as illustrated in **Exhibit 9**.

Exhibit 9: Total Business Inventories/Sales Ratio (seasonally adjusted)

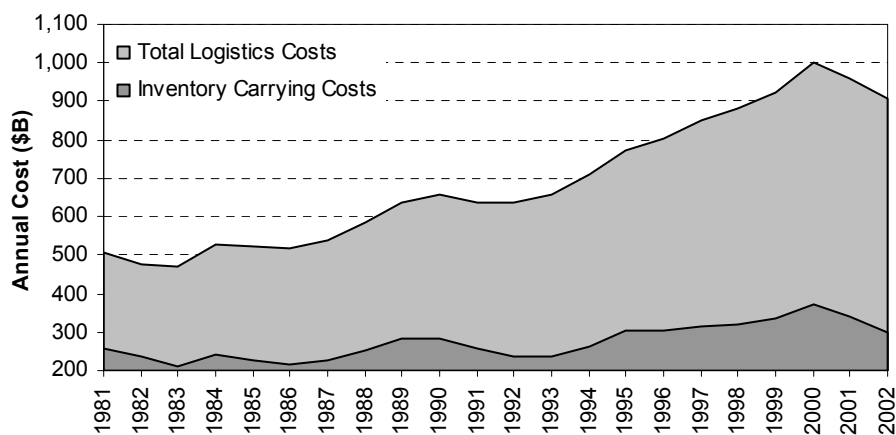


Sources: US Dept. of Commerce, January 2003; Prudential Real Estate Investors

New technologies continue to emerge. Advances in areas such as radio frequency identification (RFID) will keep raising efficiency in the supply chain and will further reduce required inventory levels and costs. The US Dept. of Defense, the largest consumer of warehouse space, recently required all its suppliers to use RFID by 2005. Wal-Mart, perhaps the largest private consumer of warehouse space, requires all its suppliers to implement RFID by the end of 2006. These trends will continue to lower inventory carrying costs. **Exhibit 10** shows the trend in inventory carrying costs relative to total logistics costs. Total logistics costs have almost doubled since 1980, but inventory costs (including warehousing) have remained relatively constant.

Advances in logistics technology have implications for both the physical characteristics of warehouse demand and the quantity of space required. The impact on total demand is simple. As inventory processes become more efficient, the warehouse space demanded per a given level of sales will decrease. The impact on the physical characteristics of warehouses is more difficult to foresee. It will vary depending on the tenants in any given warehouse market or location. Clear

Exhibit 10: US Logistics Costs Trends



Sources: "2003 State of Logistics Report," Cass Information Systems; Prudential Real Estate Investors

heights are likely to continue to increase. Cross-docking and substantial trailer storage will become more of a requirement than an amenity. Redundant power supplies, flexible/adaptable space plans, perfectly flat floors and access to bandwidth are all examples of features typically demanded by tenants with the most advanced inventory management systems. Properties that do not have these features will be more susceptible to obsolescence and, therefore, present more investment risk.

Summary

The fundamentals in the warehouse market are positive. While the future of demand growth is uncertain, construction levels have declined. This has allowed the market to experience only slow deterioration, which is the worst that should be expected for the near future. A more likely scenario would be for the rebounding US economy and demographic growth to spur additional demand for warehouse space. This will be partially offset by the three trends noted above, but not to the extent that the market rebound is completely curtailed. Good investment opportunities will still occur, but the heightened risks warrant additional investor focus on strategy and risk management in their warehouse investments.

Institutional investors must increasingly dissect their industrial investment strategies and consider the trends in the underlying industrial subtypes. Warehouse is, by far, the most important industrial subtype for institutional investment, but even in this large category material differences exist. Far-reaching trends, such as the evolution of retailing, the declining manufacturing sector and advances in logistics technology all play significant roles in determining which property characteristics and locations will be most in demand.

The evolution of retailing, particularly the notable move toward warehouse clubs and superstores and away from traditional general merchandise retailers, is placing downward pressure on space demand from this historically important segment. Thus, retail tenant scrutiny is even more important. The decline of manufacturing activity in the US, along with the gradual movement of US manufacturers to lower cost global locations, is dampening the demand for warehouse space related to certain manufacturing activities. Finally, as in most industries, advances in technology systems are increasing the efficiency of inventory systems and reducing the overall required inventory levels and, therefore, the demand for space.

In this environment, diversification can assist in mitigating portfolio risk, and a greater emphasis on liquidity and market depth is warranted. Concentrating on the Strategic Markets, with selective investment in the Major Markets and limited activity in Opportunistic Markets, can help ensure portfolio performance.

Investment Research publishes reports on a range of topics of interest to institutional real estate investors. Reports are available in hard copy or via the Web at www.prudential.com/prei. To receive our reports, or to be removed from our distribution list, contact us at prei.reports@prudential.com or phone our US office at 973.683.1745.

Prudential Real Estate Investors
8 Campus Drive
Parsippany, NJ 07054
USA

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

© Copyright 2004, 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.