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Retail Sales and Retail Real Estate

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Introduction

The evidence on the U.S. retail market seems contradictory. On the one hand, retailers appear to be experiencing increased pressure from a variety of new retail or shopping formats. So called "big box" retail-wholesalers, outlets, and mail-order sales have all generated greater competition to the retail sector, potentially shrinking profit margins for traditional retail chains [Salomon Brothers, March 10, 1992]. At the same time, retail properties appear increasingly desirable to investors, particularly when packaged as REITs [Salomon Brothers, April 1994]. This is all the more puzzling since recent evidence suggests that retail REIT shares move closely with the stocks of retailers [Myer and Webb].

Although there is a lot of interest and concern about the U.S. retail sector, there is surprisingly little macroeconomic analysis available about long run trends and/or short run fluctuations in the values of retail properties. In no small measure, this is due to the difficulty in obtaining consistent data about the behavior of retail real estate, such as sales, occupancy and rental income. In an increasingly competitive environment, such information is closely held by owners. Academic research on the retail sector has ignored these macroeconomic issues and is decidedly microeconomic in character [Epply and Benjamin]. Against this background, the objective of this report is to accumulate what data there is about the retailing industry in general, and the retail property market in particular. We find that data on the retail sales of consumer goods shows that such purchases have been gradually falling as a share of personal income. We also find that several sources of data on store construction consistently suggest that the stock of retail space has been growing faster than retail sales (when adjusted for inflation). Hence, retail sales-per-square foot in the aggregate appears to be declining, an observation which is at least partially consistent with what little direct data there is from retail surveys. These trends seem to be somewhat more pronounced for neighborhood and community, relative to larger regional centers. Finally, despite evidence of declining (constant dollar) sales-per-square foot, limited survey data on retail properties shows stable, and in some cases increasing, rental rates and net operating income (again in constant dollars). This presents a puzzle: how can center retailers be selling less per-square-foot while at the same time paying more in rent? There is some evidence that retail-wholesale price markups have increased over time, but at this time we can only speculate as to why these trends are occurring.

U.S. Retail Sales

The sales of goods that are sold at those retail stores which typically occupy shopping centers has not been growing as fast as personal income. To see this, we examine the U.S. government data on sales by the primary SIC (Standard Industrial Category) of retailer. This data is exhaustively compiled every 5 years with the retail census, and updated monthly and annually with selected sample surveys. The government makes no attempt to estimate sales by product or line of merchandise. In Table 1, we calculate the long term trends by the seven industry categories that commonly are used to characterize "store" sales. The main SICs missing are the automotive group (SIC 55) and selected sales in SIC 59 (such as catalog sales, fuel dealers). Over the last 25 years, the constant dollar growth in the 7-SIC aggregate of retail sales was 49%, far less than personal income growth of 83%. There are some exceptions however. Sales in SICs 52 and 57 (building materials, furniture and appliances) almost kept up with income growth, while sales for SIC 58 (eating and drinking establishments) grew significantly faster than income. Food, apparel, general merchandise, drug, jewelry sales (SICs 53, 54, 56 and 59) have all seen their sales increase far less than income.

Table 1: Retail Sales by SIC

SIC	% Change 1967-'93	Income Share Ratio	Income Elasticity
Building Materials (52)	78%	98%	0.8
General Merchandise (53)	46%	80%	0.58
Food (54)	25%	68%	0.2
Apparel (56)	30%	70%	0.43
Furniture (57)	79%	98%	0.95
Eating/Drinking Establishments (58)	101%	110%	1.12
Other Consumer Goods (594)	65%	91%	1.02
Sum	49%	81%	0.61
Personal Income	83%		1

Source: US Commerce Dept.

These conclusions about the relative growth in retail sales versus income also can be drawn with two other calculated indices in Table 1. In the second column we examine the ratio of sales-to-income in 1993 relative to that in 1967. In all but the one case, the share of income devoted to sales in each category has fallen. On the chance that these conclusions follow from the choice of data points in these two years, the third data column reports estimated income elasticities from a time series regression equation between sales and personal income.[1] In this calculation, with the exceptions of SICs 57, 58, and 594, the elasticities are well below one - particularly for general merchandise, food and apparel. The income elasticity of the 7-SIC composite retail category is .61, suggesting that sales should grow at only that percent of total personal income.

Retail Sales By Center

While sales by SIC of retail establishment is the proper way to examine the income stream of retailers, it is less useful for analyzing the likely income stream of retail property. Unfortunately, the government does not distinguish between those retailers located at centers as opposed to stand-alone stores. This forces us to crudely estimate shopping center sales based on the assumption that their retailers perform the same as all retailers of the same SIC. Retail centers typically have a varied mix of tenants (in terms of SIC) and tend to get categorized into three clusters: neighborhood, community, and regional.[2] In

[1]The regressions are of the form: $\log(S_t) = b_0 + b_1\log(Y_t) + b_2\log(S_{t-1})$
We incorporate lagged sales to allow for the gradual adjustment of sales to movements in income. In all cases, b_1 and b_2 are statistically significant. R^2 values range upwards of .97, and adjusted Durbin-Watson test statistics are all within range. The adjustment coefficients (b_2) are all in the range of .39 to .72.

[2]For example, in the National Research Bureau inventory of centers for the Boston MSA, there are 32 regional centers with an average size of 626,000 square feet, devoted to 91 tenants. Similarly, there are 112

Table 2, we use the ULI survey of shopping centers to examine the distribution of tenant stores by SIC across the three typical center types.[3] Neighborhood centers are dominated by the food industry, while regional centers lease most of their area to general merchandise and apparel stores. In between, community centers tend to contain a broader mix.

Table 2: Shares of Leasable Area by Tenant SIC

SIC	Center Type Neighborhood	Community	Regional
Building Materials (52)	4%	1%	0%
General Merchandise (53)	9%	38%	59%
Food (54)	52%	26%	0%
Apparel (56)	7%	13%	22%
Furniture (57)	6%	5%	4%
Eating/Drink Establishments(58)	11%	7%	3%
Other Consumer Goods (594)	11%	10%	12%

Table 3 estimates the likely sales growth for each type of center based only upon its SIC mix. This is done by weighting up the growth measures in Table 1, by the retailer mixes in Table 2. Based on their dominance by (slow growing) food stores, the sales of neighborhood centers are estimated to have grown the least, while regional centers are estimated to have had the fastest sales growth. In all cases the estimated sales growth by center is much slower than personal income, since centers historically have had few stores in the faster growing industries such as building materials, furniture and appliances, eating out.

community centers (average 165,000 square feet, 21 tenants) and 144 neighborhood centers (average 51,000 square feet, 11 tenants).

[3]Urban Land Institute, Dollars and Cents of Shopping Centers, 1993.

Table 3: Estimated Sales Growth by Center, 1967-93

Center	% Change	Income Share	Income Elasticity
Neighborhood	33.0	0.72	0.38
Community	38.5	0.79	0.46
Regional	46.5	0.80	0.59

Retail Sales Over Time

While retail sales have grown less than income between 1967 and 1993, the decline in the share of income devoted to sales has not been uniform over time. Figure 1 tracks the annual ratio of estimated sales-to-income for each type of center. Also shown is the ratio for total sales-to-income (for the sum of the seven SICs). During 1968-75, and since 1985 the sales-to-income share decline was gradual, while it was somewhat more pronounced from 1975-1985. The estimated sales-to-income share for regional centers declined sharply from 1968 through the early 80's, but since the early 80s apparel and general merchandise sales have been a stable share of income. With the continued decline in food sales, neighborhood centers have experienced a more steady decline in sales-to-income share throughout the 25 years examined.

What is behind these trends? One answer might be that disposable (after tax) income has not grown as fast as total personal income, thereby leaving little for consumption. However, this is not the case. Disposable income today stands at exactly the same share of total personal income that it was in 1967 - the two have grown identically! One might surmise that personal savings has increased (at the expense of general consumption), but the virtual absence of discretionary savings by Americans is well known. Thus we are left to conclude that Americans are choosing to spend less income on items such as food and durable goods while personal services, entertainment, travel and recreation seem to be on the rise. Additionally, Americans may also be devoting more to housing and transportation. It would appear, therefore, that the sales of items purchased in shopping centers are, in general, commanding less and less of a share of American income.

The Growth of American Retail Space

The rate of new retail space construction seems to be far outpacing the growth of retail sales. There are two sources of data that we can use to piece together a history of American retail space. The first is the widely used National Research Bureau (NRB) inventory of U.S. shopping centers. In 1993, this inventory contained somewhat more

than 38,000 entries, totaling 3.7 billion square feet. Since each entry contains the date the center opened, we can work backwards and estimate the size of the stock of space historically. Doing so assumes that no centers have been completely removed from use (as opposed to remodeled or renovated). This calculation is presented in Table 4 by center type, and suggests that the square footage of all U.S. centers increased by 216% from 1968 to 1993 - almost 4 times the growth in retail sales over this period! The growth of space has been most pronounced in the Regional and Community category and noticeably less for Neighborhood centers. In all categories, however, retail space seems to be growing at multiples of the estimated growth in retail sales (Table 3).

A possible explanation for the large discrepancy between growth in retail space and sales is that sales at retail centers have been expanding at the expense of sales at independent or stand-alone stores. It must be remembered that the estimates of center sales in Table 3 are based on the sales growth of all establishments within certain SIC categories. Perhaps food stores sales in neighborhood centers are growing rapidly, while those in stand-alone stores or establishments are not. Or perhaps apparel stores at regional centers have had much faster sales growth while stand-alone apparel stores sales have declined.[4] Such an explanation could reconcile the growth

Table 4: Growth of Retail Space

Space Type	1968 (bils s.f.)	1993 (bils s.f.)	% Change
All Centers[1]	1.186	3.759	216%
Neighborhood	0.322	0.784	143%
Community Centers	0.419	1.471	251%
Regional Centers	0.444	1.504	238%
All Stores (0%)[2]	4.448	9.658	117%
All Stores (1%)[2]	6.348	9.658	52%

[1]Source: NRB
[2]Source: Dodge

of center square footage with the increase in the total sales for those types of establishments that locate in centers - at least up to a point. Eventually, as sales shift out

[4]For example, the total sales of the types of stores that occupy neighborhood centers has grown by 33%, while neighborhood center square footage increased by 143%. Table 4 suggests that only 40% of retail space is in centers. This means that if sales at neighborhood centers actually did kept pace with square footage (and grew 143%) sales at similar stand alone stores must have declined by 40% in order for all sales at all such stores to have grown by 33% (Table 1).

of stand-alone stores and into centers, the growth rate of center sales must equal that of all the types of stores that occupy centers.

A second source of data allows us to examine this hypothesis somewhat better. The Dodge construction series gives the total square footage of all "store" structures built each year.[5] When combined with a 1977 Department of Energy benchmark survey, the Dodge data can be used to trace out the stock of all retail space - again assuming no depreciation. This is presented in the next to last line of Table 4 labeled all retail space. Here we see than centers comprised only 27% of all retail space in 1968, but since have risen to 40% of all space. Another way of saying this is to note that centers have increased their square footage by 216%, while all retail space has grown by only 117%. Thus the fact that center space has grown faster than all retail space suggests that perhaps sales have been shifting from stand-alone establishments or stores to centers.

This analysis still leaves us with a percentage growth in the total stock of retail space that is twice the growth rate of our 7-SIC sum of retail sales. How might we explain this discrepancy? The only possible answer, other than a genuine decline in sales-per-square foot, is that there has been significant demolition of older retail space. Renovations are not counted as new space in either the Dodge or NRB series, but the creation of a new center where an old one once stood is counted. The last line of Table 4 re-estimates the growth in the retail stock (with the Dodge data) assuming that 1% of the retail space in the country is made obsolete each year. This assumption is extreme enough to bring the growth of all retail space into line with that of retail sales. Without this level of obsolescence, our conclusion is that retail sales clearly have grown more slowly than retail square footage.[6]

In Figure 2, we plot the growth of retail sales to the two measures of growth in retail space. While the space growth rates obviously are higher than that of sales, the series do fluctuate closely together. After each period of strong sales growth (an economic recovery) construction turns higher (1973, 1979, 1986) and a year or two after each recession the construction or completions of space fall (1975, 1982-83, 1992). Figures 3-5 plot the relationship between sales and space growth by type of center.

While the movements in retail center construction tend to mirror the fluctuations in retail sales, there is one important exception - that of regional centers. The construction of regional centers is much smoother than for neighborhood and community centers. Furthermore, the higher rates of new building in the late 1960s, and then again more

[5]This series was tabulated so as to exclude gasoline stations and auto showrooms, to make it comparable to the sales data reported earlier

[6] Dodge data includes an estimate of retail space demolitions that is quite close to 1% annually. This is not based, however, on any direct knowlege about removals from the stock.

recently, seem largely unrelated to sales trends. This suggests that the long planning periods which may accompany centers of this size gives rise to a supply cycle that does not move closely with short run fluctuations in demand. This phenomena has been reported for major office space in the U.S. [Wheaton and Torto.]

Sales-per-Square Foot

Is there any data which directly measures the sales of retailers at shopping centers which we might use to compare with our aggregate ratios? The Urban Land Institute has been sampling shopping center owners every three years for more than two decades, and in this survey, owners voluntarily report the sales of their tenant stores. It is important to understand that he ULI sample of shopping centers is not necessarily consistent over time, nor is it statistically representative of all U.S. centers. However, it is the only long-standing survey of its type and does provide some indication of trends.[7] In Figures 6 through 8, we track the ULI reported sales per square foot, against our estimates of sales per square foot from the aggregate data, for each of the three types of shopping centers.

The ULI data suggest that for all three center types, sales-per-square foot declined from 1968 to the early 1980s - by between 20% to 25%. Over the last ten years, the ULI data suggests that there has been some fluctuation, but little systematic trend in sales per square foot. Our aggregate calculations show a far greater decline from 1968 to the early 1980s for all centers, more on the order of 40% to 60%. However, they also show less of a decline over the last ten years, and in the case of regional centers, a fairly stable sales per square foot since 1982.

It is hard to judge which of these data series is more accurate. The aggregate calculated series do not incorporate center demolitions (which we know little about), and can only estimate the sales at actual centers. On the other hand, there are serious questions about the degree of representation of the ULI sample. It is noteworthy, however, that both series suggest that the supply of retail space has grown faster than retail sales (in constant dollars).

The final information available in the ULI survey is the average gross and net (rental) income received per square foot at each type of center. Figures 9a and 9b track these series, again from the 1968 through 1993 surveys. This data suggests that, when adjusted

[7]In recent surveys, the ULI has sent out roughly 20000 forms and receives back only around 1200 completed answers. This small, voluntary response rate suggests that the survey results may well not be representative. At the same time, ULI feel that the respondents tend to be a common group, and so the sample may be consistent over time.

for inflation, rental income has been roughly constant in neighborhood and community centers, but has almost doubled over the period in regional centers.

This data poses a paradox: the income generating capacity of shopping center space has fallen, while the rental cost of that space has risen. Why would retailers be willing to pay more for space that is generating less sales per square foot? How can they afford to do this? To get a more complete picture of retailer behavior over the last two decades, we need also to examine data on retail employment, wages and prices.

Retailer Productivity and Retail Prices

Government surveys keep close count on the number of retail employees by SIC category. In Figure 10, we trace out the sum of employment in 6 of our 7 retail SICs and compare this with the total sales of those same SICs. It is interesting that from the early 1970s up to the middle 1980s, the sales per retail worker in the aggregate fell quite dramatically. Since the middle 1980s, retail worker productivity has been relatively flat.

Figure 10 also tracks the average hourly wage paid to all retail worker (in constant dollars). This shows a roughly similar decline since the mid 1970s. Thus on the surface, it seems that the declines in retail worker productivity have been approximately matched with declines in retail worker wages - as would be suggested by the economics of a competitive factor market.[8]

The decline in aggregate retail sales-per-worker or retail worker productivity hides some important differences that have been occurring within the different SIC categories. In Figures 11 and 12 we trace out the sales-per-worker for each of the six SIC categories. There have been sharp declines in sales for each worker in SICs 54 (food), 56 (apparel), 58 (eating and drinking) and 59 (other durable). Sales-per-worker has been roughly fixed for home furnishing stores (SIC 57), and has shown strong growth in general merchandise stores (SIC 53). Across the six examined SIC categories, virtually all have the pattern of stabilizing or improving productivity since the mid 1980s, after declines in the 1970s and early 80s. Unfortunately, data on the hourly wages of retail workers by these same detailed SICs is not available except for only the last several years.

Thus with the exception of general merchandise stores, a dollar of sales now requires more service or labor than it did twenty years ago, although the cost of this labor seems to have been declining at comparable rates. The exception of general merchandise stores

[8]Average hourly retail wages fell more sharply in relation to the wages of other more skilled occupations, which grew modestly over this period.

may simply reflect a mix effect: a larger portion of these stores today are discount or "big box" retailers, as opposed to the more conventional department stores of two decades ago. In this case, the productivity of each type of general merchandise store might have fallen, but the shift in store mix to the higher productivity types would give overall productivity a boost. Unfortunately, the government's sub-categorization of general merchandise stores goes back only a few years, and so it is impossible to test this hypothesis directly.

Thus we have retailers facing declining or stagnating sales-per-worker, but also wage declines which may have reflected these reductions in worker productivity. Retailers also are facing declining sales per square foot, but in the space market rents have been rising or flat. The net effect of these trends would be to squeeze profit margins.

How have retailers survived? There would seem to be only one possibility: the wholesale cost of goods must have fallen (or risen less) than retail prices - and the more so for those retailers whose worker and space productivity has fallen the most. In effect, the retail-wholesale markup must have risen to offset declines in sales-per square-foot and any declines in sales per worker that were not matched by declining wages.

Table 5 traces the average consumer price and producer price indices for some of those goods typically purchased in establishments of the retail SIC categories studied here. For food consumed at home and eaten out, the CPI price index has risen much faster than the PPI index of wholesale food prices. Returning back to Figures 11 and 12, retail food stores along with eating and drinking establishments are the two SICs with the largest decline in worker sales - among the six SICs examined. For these establishments, declining worker productivity could well have been offset by higher price margins or markups as well as wage decreases.

Table 5: Price Increases by Industry

	CPI Food home	CPI Food away	PPI Food	CPI Househld furnish	PPI Furniture & fixture	CPI Apparel	PPI Apparel
1967-80	152%	161%	129%	133%	83%	71%	81%
1980-94	58%	83%	36%	22%	47%	41%	37%
1967-94	299%	377%	210%	184%	169%	141%	148%

For household furnishings, the CPI has slightly outpaced the comparable PPI, but by nowhere near as much as for food. In Figure 12, we saw only a very modest decline in sales-per-worker for furniture stores. Finally, Table 5 shows that for apparel, the PPI has

slightly outpaced the CPI. Again in Figure 11, apparel stores had only slight declines in worker productivity, while general merchandise stores (that sell much apparel) had significant gains. Weighting up the productivity trends of these two types of establishments yields a slight increase in sales-per-worker for all types of stores that sell apparel.

Thus there is some evidence that the pricing of goods by retailers (in relation to wholesale costs) has moved inversely with trends in worker productivity. In effect whatever negative (or positive) shocks have occurred to sales-per-worker have not only shown up in wages, but also have been passed on to consumers in prices. Unfortunately, the available data make it difficult to draw this conclusion about shocks to space productivity. The problem is that what little space data we have is by type of center, while price data is by line of merchandise. Using the data we have suggests that price markups may have moved positively with changes in space productivity. For example, neighborhood centers (with a high concentration of food stores) may have seen the least decline among centers in sales-per-square foot, yet food products have experienced the greatest increase in retail-wholesale markup.

The Outlook for Retail Real Estate.

With the sketchy data that is available for the retail sector, drawing firm conclusions and making forecasts would seem at best to be speculative. With these reservations, however, our analysis does offer some conclusions.

1) The sales of goods typically purchased in stores and shopping centers has been growing more slowly than consumer income. Thus in the planning of retail facilities, even at a very local level, growth in personal income is not quite accurate as an indicator of the future growth in demand.

2) The growth in retail sales has been at about half the rate of construction of all retail space. Thus either there has been a significant annual loss of retail space through demolition, or else the nation's stock of retail stores is selling less and less per square foot.

3) The growth rate of retail sales (in constant dollars) has been only about a quarter of the construction rate of shopping center space. This exceptionally large imbalance undoubtedly reflects some shift in sales from stand-alone stores to stores located in centers. Such a shift can only occur for a finite time, however, and thus current construction rates are a cause for concern. Shopping center survey data from the ULI also show longer term declines in sales-per-square foot, but not as dramatic as the aggregate data.

4) Recent economic forecasts call for long term growth in personal income to be in the 2.0% -2.5% range (in constant dollars). Based on past trends, this should yield long term retail sales growth of 1.0-1.5% (again in constant dollars). In the current recovery, shopping center space is growing at 3.0% annually, while total store space is increasing at a 2.0% annual rate. These trends cannot continue for long without further adversely affecting retail property performance.

5) In addition to the apparent decline in sales-per-square foot of retailers, there have also been declines in sales-per-retail worker. The declines in worker productivity seem to have been matched by declines in retail worker wages. In the case of space, however, the apparent declines in space productivity do not seem to have been matched by decreases in space rents. Quite the contrary, the ULI survey data suggests that shopping center rental rates have either remained fixed or risen significantly (in constant dollars).

6) There is some evidence that consumers may be paying for whatever changes have occurred in retailing productivity. Movements in the CPI have exceed that of the PPI for those goods sold in stores where worker productivity has declined the most, while the PPI growth has exceeded CPI increases for some of those goods that are sold in stores with increases in worker productivity. The data on space productivity (by shopping center) cannot easily be compared with price data (by line of merchandise).

7) Finally, the analysis of retailing and retail real estate needs a drastic infusion of better data. Government surveys of retailers do not include any information about space, and no longer are released by location or type of shopping center. Industry information is very scarce and unsystematic, and is collected only by shopping center owner - not by retailer. Comparing the two is extremely difficult, making it nearly impossible to accurately study the overall behavior of this important sector.

Figure 1

Sales/Personal Income (1968=100)

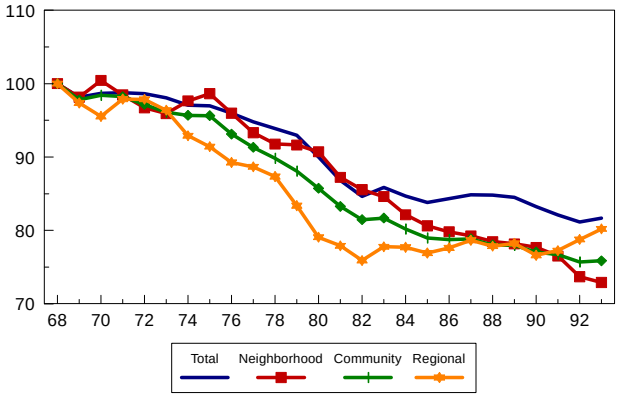


Figure 2

Growth in Sales and Retail Stock

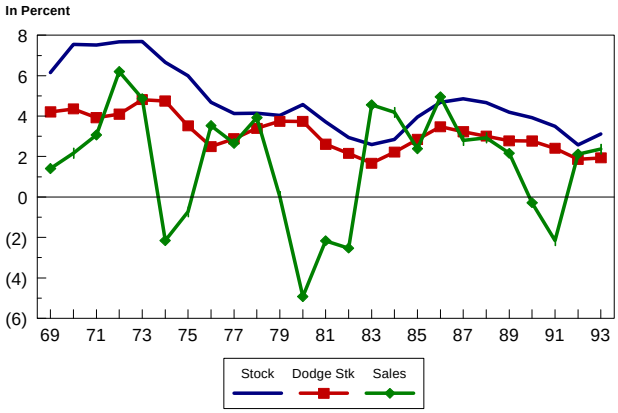


Figure 3

Neighborhood Center Retail Sales and Space Growth

Annual, In Percent

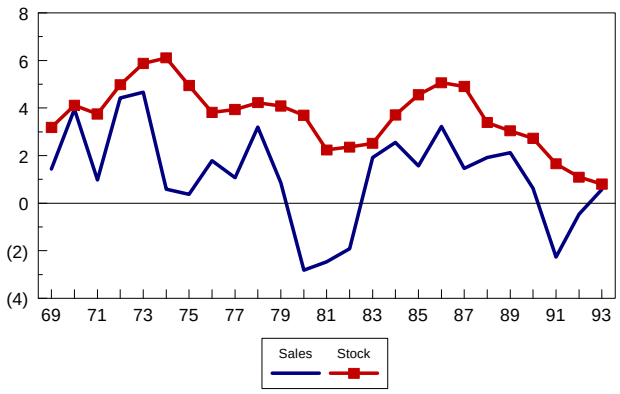


Figure 4

Community Center Real Sales and Space Growth

Annual, in Percent

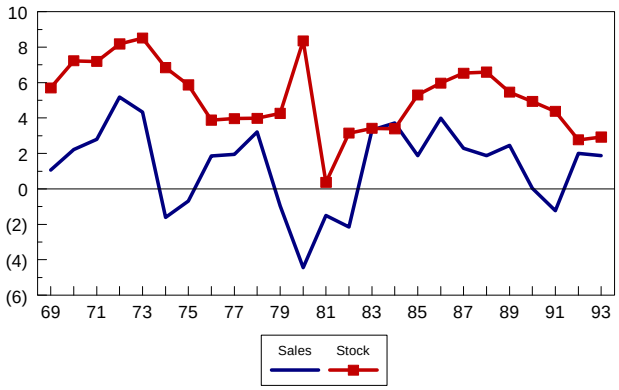


Figure 5

Regional Center Retail Sales and Space Growth

Annual, in Percent

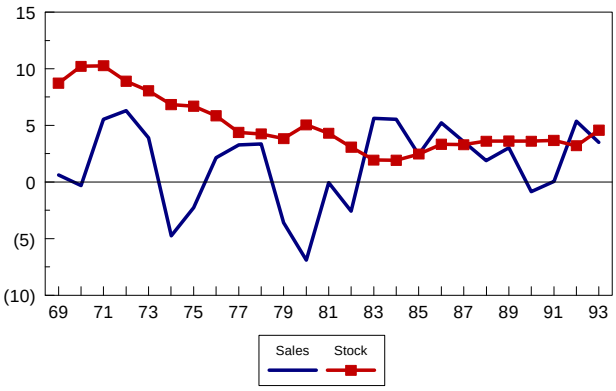


Figure 6

Sales per Square Foot: Neighborhood Center

(1967=100)

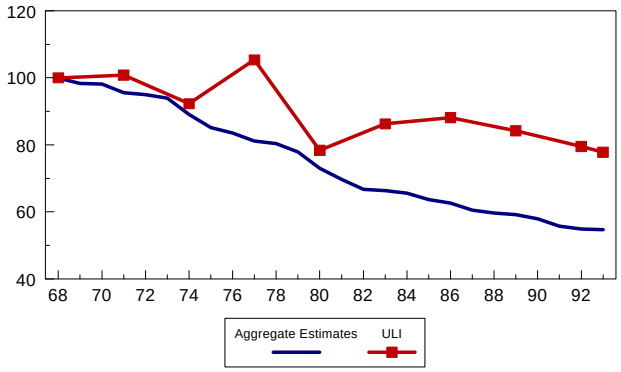


Figure 7

Sales per Square Foot: Community Center

(1967=100)

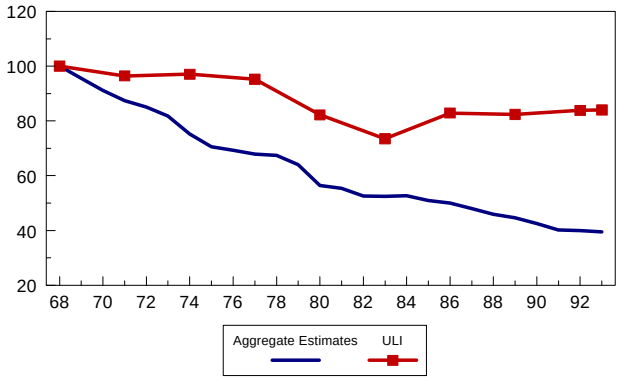


Figure 8

Regional Sales/Square Foot

(1967=100)

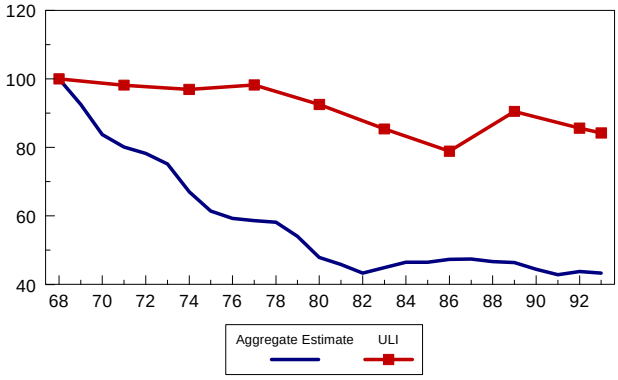


Figure 9

Gross Income per Square Foot by Center

(1967=100)

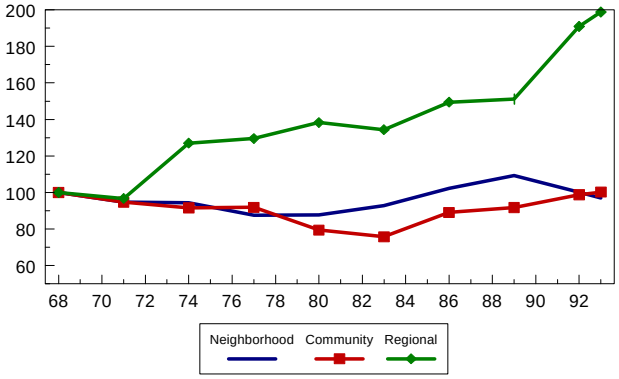


Figure 10

Net Income per Square Foot By Center

(1967=100)

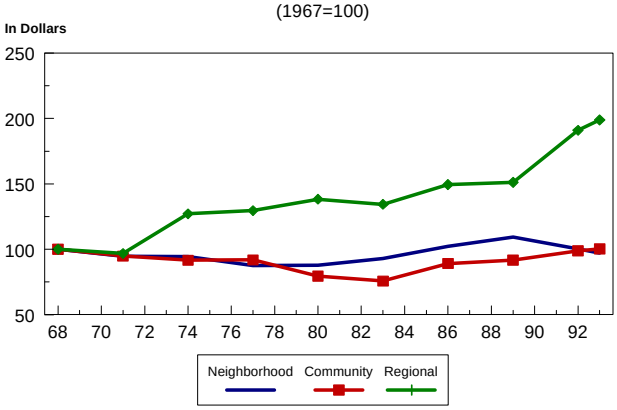


Figure 11

Retail Worker Ratios

(1974=100)

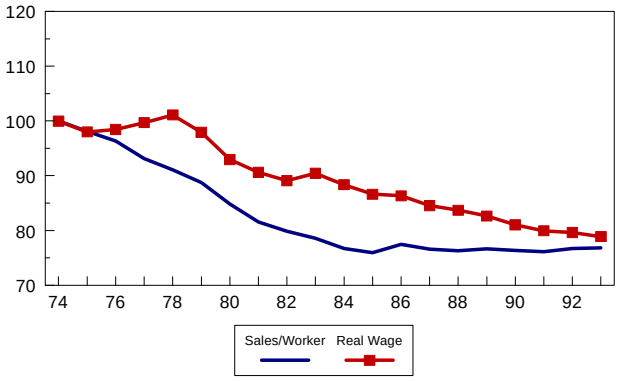


Figure 12

Retail Worker Productivity

(1974=100)

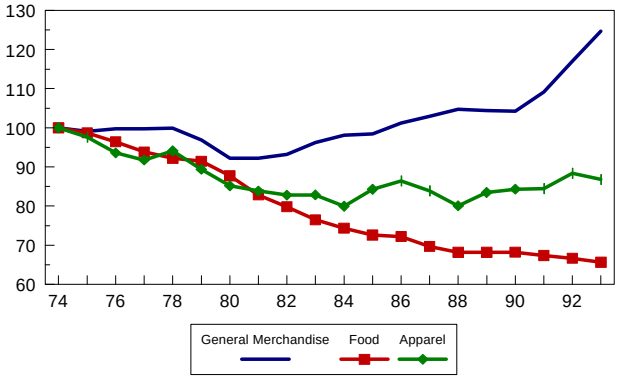
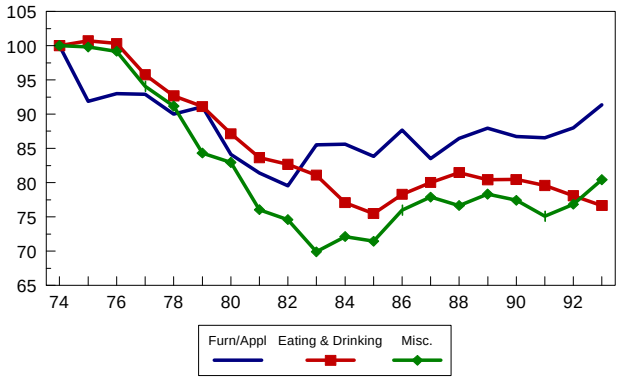


Figure 13

Retail Worker Productivity

(1974=100)



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