

# The Evolution of Retail Markets in Metropolitan, Micropolitan and Rural Regions

Ronald S. Jarmin<sup>1</sup>, Shawn D. Klimek<sup>2</sup> and Javier Miranda<sup>3</sup>  
Center for Economic Studies, U.S. Census Bureau<sup>4</sup>

Prepared for the NBER/CRIW Conference:  
Producer Dynamics: New Evidence from Micro Data

April 9, 2005

## Abstract

We examine the evolution of local retail markets using recently constructed longitudinal data from the U.S. Census Bureau. The structure of the U.S. retail sector has been undergoing dramatic changes since the end of World War II. The data we use, from the Longitudinal Business Database (LBD), unfortunately do not extend back that far. However, the LBD does contain annual data on all retail establishments back to 1975. No other dataset has universe information for such a long time series. The LBD also allows us to measure firm entry and exit in local markets since it contains detailed industry, geography and firm ownership information. We used these unique data to examine the changing structure of retail markets. We focus on the growing role of chain store retailers. Retail firms that operate more than one retail store accounted for nearly all growth in retail employment and for all the growth in the number of retail establishments over the period we study.

---

<sup>1</sup> [Ron.S.Jarmin@census.gov](mailto:Ron.S.Jarmin@census.gov)

<sup>2</sup> [Shawn.D.Klimek@census.gov](mailto:Shawn.D.Klimek@census.gov)

<sup>3</sup> [Javier.Miranda@census.gov](mailto:Javier.Miranda@census.gov)

<sup>4</sup> Disclaimer and Acknowledgment: This paper was written by Census Bureau staff. It has undergone a more limited review than official Census Bureau publications. Any views, findings or opinions expressed in this paper are those of the authors and do not necessarily reflect those of the Census Bureau. We would like to thank participants of the NBER/CRIW pre-conference in July 2004 for their many helpful comments.

## 1. INTRODUCTION

The U.S. retail trade sector has undergone dramatic change in recent decades. The share of U.S. civilian employment associated with retail trade has increased from 12.6% in 1958 to 16.4% in 2000, and retail employment has more than doubled. In addition to this growth, the sector has been affected in important ways by changes in technology and societal trends such as suburbanization and changes in consumer preferences.

The structure of retail markets, affected by all these forces, has been continuously evolving. A major feature of this evolution has been the growth of large national retail chains. This has been coupled with a dramatic decrease in the share of retail activity accounted for by small single location or “mom-and-pop” stores. In 1948 single location retail firms accounted for 70.4% of retail sales and only 60.2% by 1967 (U.S. Census Bureau (1971)). By 1997, this share had fallen further to 39%. Large retail firms with more than 100 establishments accounted for 12.3% of retail sales in 1948 and 18.6% in 1967 (U.S. Census Bureau (1971)). In 1997, 100 plus establishment retail firms account for 36.9% of all retail sales.

Many observers have noted the dramatic changes in the structure of retail markets. The rise of big box national retail chains, such as Wal-Mart, is often cited as the explanation. However, the figures cited above indicate that the trend away from “mom-and-pops” towards national chains has been underway since long before the advent of the big box stores. The trend also pre-dates the wide scale adoption of information technology by retailers. Rather, the rise of technologically sophisticated national retail chains like Wal-Mart, Toys-R-Us and Home Depot is a simply part of the larger trend towards larger scale retail firms that has been underway for some time.

What is clear is that the dynamics of the changes during the post WWII era in the retail sector are not well documented. This is due, in part, to a lack of comprehensive firm level longitudinal data that would allow researchers to describe and analyze the evolution of retail markets. In this paper, we use a recently constructed Census Bureau dataset, the Longitudinal Business Database, to examine local retail markets over the 1976 to 2000 period. We believe these are the best data available to study trends across

the entire U.S. retail sector over a long time period. These data are not perfect, however, and we discuss several remaining data gaps and measurement issues.

The paper proceeds as follows. In section 2 we summarize some of the trends that have characterized the retail sector in the U.S. over that last several decades. We discuss data and measurement issues in section 3. We provide some basic but informative descriptions of the evolution of local retail markets in section 4 and offer conclusions and discuss future research in section 5.

## **2. TRENDS IN THE U.S. RETAIL SECTOR**

### ***A. Basic Feature of the Recent Evolution of U.S. Retail Markets***

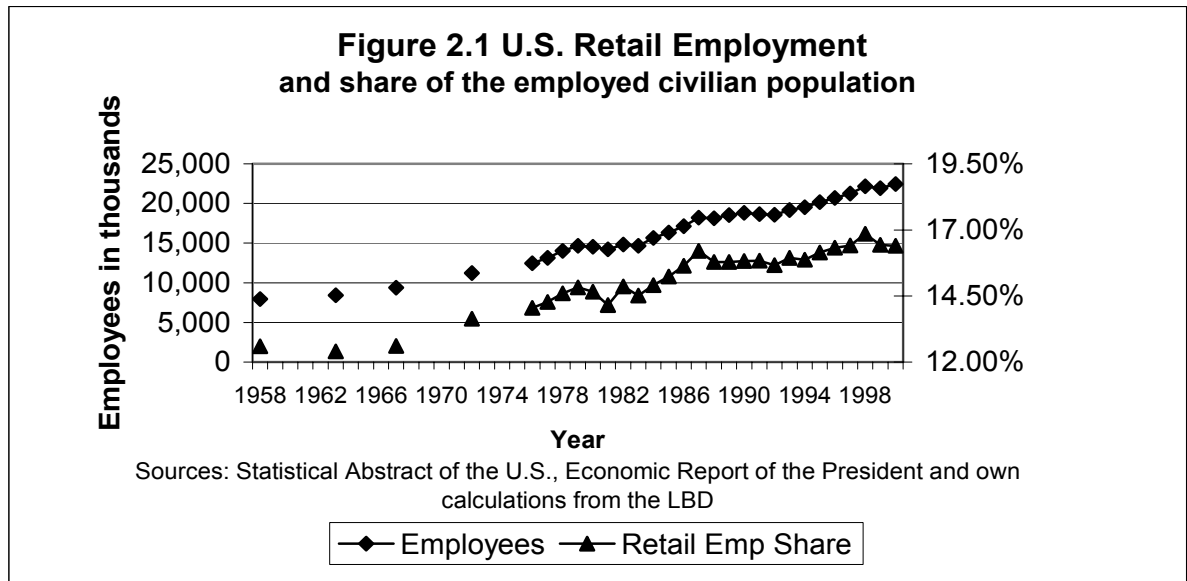
Like the rest of the U.S. economy, the retail trade sector has been undergoing significant structural changes in recent decades. However, since everyone is a consumer and interacts with businesses in the retail sector regularly, these changes have not come without controversy. The trend away from smaller scale “mom and pop” retailers and towards large national chains of “big box” stores is often blamed in the popular media for a host of social, economic and environmental ills. Our purpose is not to participate in this debate, but to improve the tools analysts and policymakers have at their disposal to measure changes in the structure of the retail sector and to begin to understand the forces that underlie them.

To lay the groundwork for the rest of this section, it’s useful to review, from a more macro perspective, what’s been going on in the retail sector over the last several decades. Figure 2.1 shows the growth of U.S. retail employment from 1958 to 2000. We see that, on an SIC<sup>5</sup> basis, retail employment grew from just under 8 million in 1958 to over 22 million in 2000. The figure also shows that the share of retail in overall U.S. employment has gone up from 12.6% to 16.4%.

While retail employment saw a dramatic increase over the 1958 to 2000 period of around 175%, the number of retail establishments increased by a modest 17% as shown

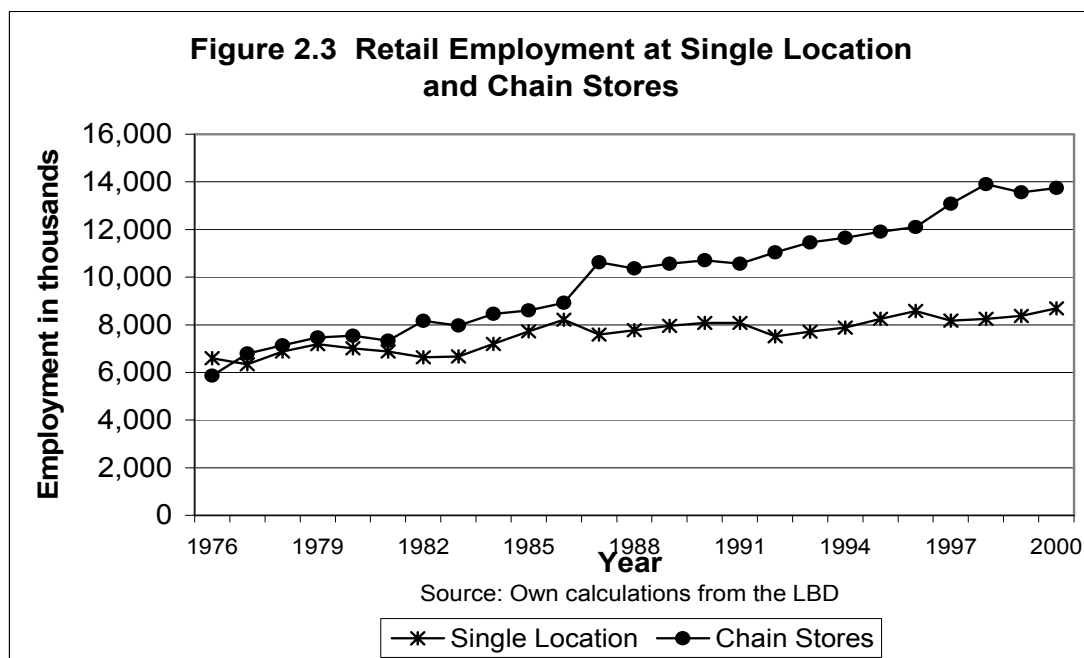
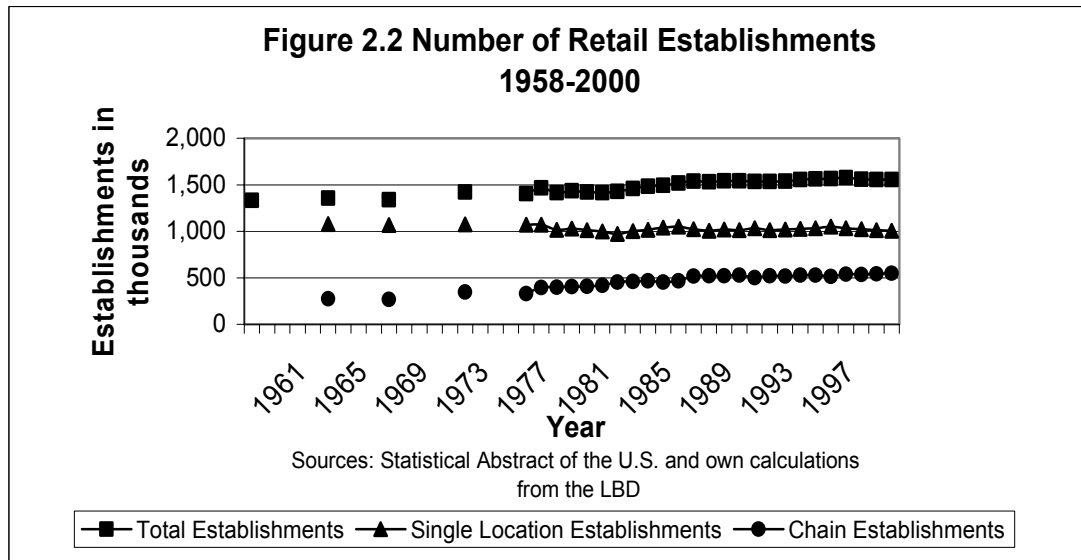
---

<sup>5</sup> We use an SIC definition of the retail sector in this paper. The Census Bureau adopted NAICS in 1997, but maintained SIC codes on its business register until 2001. Given difficulties in re-classifying all historic retail data in the LBD on a NAICS basis (see Bayard and Klimek 2003), we decided to use SIC definitions.



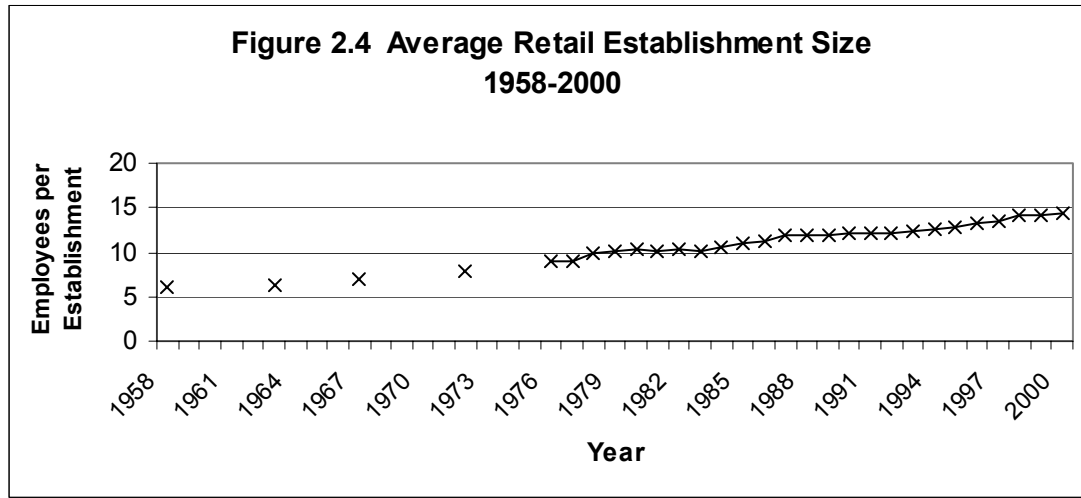
in figure 2.2. It's a striking feature of the evolution of retail markets that over the last four decades of the twentieth century, the U.S. population increased by just over 100 million persons or 56%, but the number of retail establishments serving them grew by only 17%. Figure 2.2 also shows how the composition of this “small” increase in retail establishments is accounted for by single location establishments (mom and pop stores) and establishments owned by multiple location retailers (chain stores). The figure shows that the number of single location retail establishments actually decreases slightly over the period while the number of chain store locations more than doubles. Retail establishments operated by multiple location chain retail firms accounted for 20.2% of all retail establishments in 1963 and for 35% in 2000.

The ascendancy of chain stores is clearly one of the most important developments in the evolution of retail markets in the U.S. and many other developed economies. Chain stores differ in many ways from the single location mom & pop stores that once dominated retail. One of these is size. Figure 2.3 shows that while there are many more single location retailers, the chain stores have grown to dominate overall retail employment. Between 1976 and 2000, employment at single location retailers grew by roughly 2 million workers. Employment growth at the smaller number of chain store retailers, on the other hand, was slightly under 8 million. Thus, we see that all the growth in the number of retail outlets and most of the growth in retail employment has come from retail firms that operate multiple retail establishments.



An obvious consequence of the relatively larger growth of retail employment compared to retail establishments is that the average size of retail establishments has grown substantially over time. Figure 2.4 shows this for the 1958 to 2000 period. Over that period the size of the average retail establishment has more than doubled. Retail customers today are not shopping at the same kind of stores that existed 40 years ago. They are far more likely to be patronizing large chain stores. But even the nature of the small single location, “mom-and-pop”, stores has changes. In results discussed further in section 4, we see that even single location retail firms have gotten larger since 1976. This

may be due to technological changes that increase optimal store sizes, or some other competitive pressure exerted by the growth of large chain retailers.



### ***B. Analyses of the Evolution of Retail Markets***

Researchers have developed both theoretical and empirical models that attempt to explain many of the features of retail markets. However, researchers have been hampered by a lack of detailed and comprehensive data on the retail sector. We hope that datasets such as the LBD will provide the tools researchers need to make more progress.

The feature of retail markets that attracts the most attention in the academic literature is the emergence of dominant chain retailers. Bagwell, Ramey and Spulber (1997) show how firms can come to dominate retail markets through large investments in cost reduction and vigorous price competition. Holmes (2001) explains how investments in information technology can lead to lower inventories, more frequent deliveries and larger store sizes. Doms, Jarmin and Klimek (2004) estimate the impact of investments in information technology on retail firm performance. They find that large firms account for nearly all the investment in IT in the retail sector and that IT improves the productivity of large firms more than it does for smaller firms.

However, as shown in the previous section, modern retail markets are marked by the simultaneous presence of large chain and small “mom and pop” stores. While the relative importance of the two classes of retailers has changed over time, the chains have not yet driven out all the “mom and pops”. Dinlersoz (2004) and Ellickson (2004) have

models that explain the simultaneous presence of dominant and fringe retailers. Basically, they view retail markets as segmented between large chain firms that invest in sunk costs, such as advertising, and small “mom-and-pops” that don’t, but offer other retail attributes such as better customer service. These models predict that the number of chains operating in retail markets increases less than proportionately to increases in market size and the number of single location mom-and-pops grows roughly proportionately. Put differently, the average size of chain stores grows with market size and the average size of mom-and-pops does not. Also, Campbell and Hopenhayn (1999) show that models where margins decline with additional entry can explain observed market structures where the number of retailers decline with market size.

Several observers have noted the important link between structural change in the retail sector and productivity growth. Sieling, Friedman and Dumas (2001) and McKinsey (2002) both note that competitive pressure from technology intensive chain stores such as Wal-Mart leads to productivity growth in the sector both by displacing less efficient retailers and by stimulating productivity improvement at surviving retail firms. Foster, Haltiwanger and Krizan (2004) use Economic Census data to decompose changes in productivity. They show that net entry accounts for nearly all the productivity growth in the retail sector. The entry of establishments owned by chains is especially important as they are typically more productive than even the surviving incumbents.

In a more detailed analysis of the displacement of entry by large efficient retailers, Basker (2005) uses a dataset of the entry of Wal-Mart into counties, and uses county business patterns data to examine the ex post change in the employment and number of producers. She shows that in the short run, Wal-Mart entry boosts employment in the sector by several hundred, but in the longer run as smaller retail shops exit the market the employment in the retail sector falls off. The end result is that retail employment is actually larger (by about 50 jobs) than it was prior to Wal-Mart entering, while the number of establishments falls. However, she also finds an adverse affect on the wholesale sector, which loses about 20 jobs.

### 3. DATA AND MEASUREMENT ISSUES

The discussion in the previous section helps us consider the data requirements for analyzing producer dynamics and the evolution of retail markets. The concept of producer dynamics described in economics textbooks is pretty straightforward. Producer dynamics capture the entry and exit of sellers in some abstract market for a good or service. Theoretical models of markets describing the behavior of buyers and sellers in various market settings show that the structure (e.g., the number and/or size distribution of sellers) and the presence (or absence) of barriers to entry are important factors in determining how efficiently markets operate. Accordingly, much of the interest in empirical measures of producer dynamics has been stimulated by policies and laws designed to enhance market performance.

The theoretical literature abstracts away from the definition of a market, but this definition is at the very heart of empirical work. Empirical analyses of markets ideally require data at the firm-product level where product refers to some bundle of characteristics that would include price, location and other product characteristics. However, such detailed data are rarely available. Thus, most empirical analyses of producer dynamics do not precisely measure the concepts delineated in textbooks that are important for understanding competition policy.

#### *A. Data Requirements for Analyzing the Evolution of Retail Markets*

The Census Bureau's Longitudinal Business Database (LBD) has several features that make it useful for studying producer dynamics and the evolution of retail markets. These include:

- Establishment (store) level data for the universe of retailers with paid employees
- Information for each establishment on the following:
  - Longitudinal Linkages
  - Firm affiliation (firm structure, ownership changes)
  - Location
  - Year of birth (provides age for continuers)



- Year of death
- Detailed SIC and/or NAICS industry codes
- Size (based payroll and employment)
- The LBD can be linked to Economic Census and survey data at the establishment and firm levels
- “Long” time series

These features allow researchers to flexibly define markets and track changes in their structure over time. Linked to data on demand conditions and other unique features of particular markets, the LBD can be an extremely useful tool to analysts interested in producer dynamics.

Below we discuss how we use these features of the LBD to examine the evolution of retail markets. We also point out remaining data gaps and measurement issues. Important among these are the lack of detailed product information for retail establishments. The economic censuses are of some help here, but as mentioned before, these data are available only every five years and a substantial portion of the retail universe is never set detailed questionnaires. Also, detailed price data are not even collected in the Economic Censuses. Thus, much of the information to understand the competitive dynamics of local retail markets simply does not exist in a form usable by researchers.

## ***B. Using the Longitudinal Business Database to Study the Evolution of Retail Markets***

### ***i) Characteristics of the LBD***

The LBD is being developed by the Center for Economic Studies as part of its mandate to construct, maintain and use longitudinal research datasets. The LBD is based on the Census Bureau’s Business Register (BR), formerly the Standard Statistical Establishment List (SSEL), and contains longitudinally linked establishment data for all sectors of the economy. Currently, it covers the period between 1975 and 2001. For this paper, the main advantage is that longitudinally linked data are available annually for all retail establishments in the U.S.

A detailed description of the LBD is available in Jarmin and Miranda (2002). However, a few additional points about its construction are useful here. The LBD is

made by linking annual Business Register (BR) files. The BR is a continuously updated database of basic information about all employer business establishments in the U.S. The BR contains name and address information and data on payroll, employment and industrial activity. The BR also contains a number of numeric establishment and firm identifiers that can be used to track establishments over time.

In particular, the Permanent Plant Number (PPN) was introduced in 1981 to facilitate longitudinal analysis. It is the only numeric establishment identifier on the BR that remains fixed as long as the establishment remains in business at the same location. Also, research using the Longitudinal Research Database (LRD), a manufacturing sector only precursor to the LBD, showed that there are breaks in PPN linkages leading to spurious establishment births and deaths. Other numeric identifiers can change over time with various changes in the status of an establishment (e.g., ownership changes). For these reasons, name and address matching was used to augment the numeric identifiers to create the longitudinal linkages for the LBD. Successive years of the BR were first linked using numeric identifiers. The matches (i.e., numerically identified continuers) were set aside and the residuals were submitted to name and address matching using sophisticated statistical record linkage software. The improved establishment level identifier allows us to create the most accurate measures of establishment entry and exit for any Census Bureau dataset.

Establishment and firm identifiers in the LBD allow us to examine entry and exit patterns as well as the behavior of firms and establishments within geographic markets. The annual universe coverage of the LBD is especially useful for these purposes. No other data source has annual coverage of the universe of employer establishments for as long a time period as the LBD or with the ability to match establishments with their parent enterprise. Various other data sources share some, but not all, of these characteristics.

For example, the Census of Retail Trade also covers the universe of establishments, but only occurs every five years. This means that entry and exit of retail establishments and firms between Census years would be missed. The Annual and Monthly Surveys of Retail Trade occur more frequently, allowing the measurement of changes at the annual or even monthly level, but these data only collect information from

a relatively small sample of firms. This means that we no longer have universal coverage of the sector, and the entry and exit of non-sampled firms would be missed. The Bureau of Labor Statistics (BLS) also has a longitudinally linked version of their business register, but they only have information for a taxpaying unit within a state. This means that the BLS data could not be used to address questions about the role of regional or national firms, as we discuss in the following section.

Longitudinal micro data for establishments and firms allow us to construct both establishment and firm based measures of market structure. Measures of firm dynamics are better suited to address questions regarding changes in market structure, where both the number of establishments and ownership (or control) of those establishments are important. Measures of establishment dynamics are better able to address questions regarding flows of workers and number of establishments in the market. The relationship between the two measures is not obvious. On the one hand firm dynamics will omit some entry and exit of establishments, as firms already producing in the market expand the number of establishments in the market. On the other hand, establishment dynamics will miss vital information on the ownership and control of establishments, which may be an important determinant of establishment behavior. Given the very different nature of these alternative measures and the implications on aggregate statistics, we compute statistics for both establishments and firms.

## ***ii) Measurement Strategy and Issues***

The ability to identify firms in these data is key to understanding the evolution of markets. Firms are not homogeneous entities; some firms are large, have more resources or may have experience in multiple markets. These differences are likely to drive differences in firm behavior and outcomes. Along these lines there has also been much popular attention regarding the displacement of small “mom and pop” stores by large national chains. Thus, we use the information in the LBD to identify and distinguish between four types of retail firms in much of the analysis that follows. Our classification is based on the number of states a firm operates in similar to Foster, Haltiwanger and Krizan (2004). First, single store retailers are defined as their own group, which we also consider to be representative of “mom and pop” stores. Second, we classify all multi-unit firms into three types of chain firms: local, regional, and national. Specifically, we

classify a firm as a local chain if it operates establishments in only one state. We classify a firm as a regional chain if it operates in at least two states but no more than 10 states. Finally, a firm is a national chain if it operates in more than 10 states.<sup>6</sup>

The BR contains detailed geographic information down to the Census block code. However, county is the smallest reliable geographic unit of analysis that is available in the LBD. Coding to finer levels is less of a priority for the Census Bureau since few statistics are published for geographic units smaller than the county level, and as a result these measures are not as reliable. The Bureau of the Census assigns county codes to each establishment by geo-coding their physical or mail address.

Detailed geographic information allows us to analyze the changes taking place in small geographic markets. Ideally we would like to define markets based on some measure of the geographic clustering of retailers and the population that they serve. Our data does not currently allow us to do this so instead we define local markets based on the administrative definition of a county. Defining local markets in this fashion is clearly arbitrary. A local retail market can encompass multiple counties particularly in metropolitan areas. At the same time one county can encompass multiple local markets, as is often the case in rural counties. In addition, a county may encompass very different types of markets. A county may have areas of slow growing low population density and scarce business activity as well as pockets of fast growing high population density. This form of measurement error complicates the task of explaining and interpreting the data for county level markets against predictions from theoretical models. We attempt to mitigate this problem by classifying counties as metropolitan, micropolitan or rural based on their 2000 Core Base Statistical Area code (CBSA)<sup>7</sup>.

There are 1,083 counties classified as metropolitan areas, 682 counties classified as micropolitan areas and 1,336 counties classified as non-metro areas based on CBSA codes. We refer to these non-metro areas as “rural” areas. We exclude from our computations the states of Alaska and Hawaii as well as outlying U.S. territories. Table 1

---

<sup>6</sup> We also explored an alternate definition using a measure of distance for all establishments within a firm. We find that this measure does differ somewhat from a number of states based definition. We decide at this point to stay with the literature.

<sup>7</sup> Detailed information on these new geographic definitions can be found in Office of Management and Budget (2000).

below shows that most of the U.S. population of individuals and firms is today located in metropolitan areas. Approximately 17.3% of the population of individuals and 13.5% of the population of establishments is located in rural or micro areas. On average rural areas are less than 7% the size (in population terms) of metro areas. The average micro area is about 20% the size of the average metro area.

**Table 1 Characteristics of CBSAs and Rural areas in 2000**

	Counties	Population	Retail			
			Firms	Estabs	Employment	Payroll
Metro	1,083	229,783,293	961,264	1,223,079	18,660,642	319,571,179
Micro	682	29,023,781	159,969	176,701	2,187,425	31,296,137
Rural	1,336	19,229,414	120,242	129,161	1,256,810	17,625,669
County Means						
		Population	Firms	Estabs	Employment	Payroll
Metro		212,173	888	1,129	17,231	295,080
Micro		42,619	235	259	3,212	45,956
Rural		14,404	90	96	939	13,163

Source: Own Calculations

It is not unusual in our data to see establishments that border county lines switching back and forth. This is primarily an artifact of updates to the census files that map street names to counties. In our empirical analysis we assign a unique county code to establishments observed switching county codes.<sup>8</sup> We assign the county coded during the latest census year when possible; otherwise, we assign the modal county for the establishment. Our eventual goal is to use variation in many dimensions at the county level to control for differences in market characteristics including demographic composition, tax structure, communications infrastructure and proximity to other population centers.

The decision to open a new establishment or to close one in any one particular market is made at the firm level. In this sense the ability to identify firm dynamics in small geographic areas is critical for understanding firm behavior as well as their response to market changes. The detailed establishment level data in the LBD allow us to identify when a firm first enters a county, when it exits a county, and whether it has a presence in other county markets. We can also identify firm expansions or contractions in

<sup>8</sup> Miranda (2001) documents that approximately 4% of establishments show changes in county codes.

a particular market, and whether it does so by adjusting employment at existing establishments or by adjusting the number of establishments.

With this in mind we construct measures of producer dynamics following the work of Dunne, Roberts and Samuelson (1988). We define a firm entry into a local market in year  $t$  if the firm has no presence in the county in year  $t-1$  but it is operational in year  $t$ . We identify a firm exit in year  $t$  when the firm has no presence in the county in year  $t$  but was operational in year  $t-1$ . Note that as a result of our focus on local markets, a firm can be an entrant into multiple markets and simultaneously account for one or more market exits. Also note that measures designed to capture firm dynamics are quite different from those capturing establishment dynamics. An establishment entry is not necessarily a firm entry if the firm was already present in that market. Similarly the closure of an establishment does not necessarily generate a firm exit if the firm remains operational in the county.

The LBD also contains information of the year of birth and death for each establishment. This is an internally constructed measure. The year of birth is identified in the data by the establishment's first appearance as an active payroll unit. The year of death is identified by the establishment's permanent exit from the data; the moment when they stop reporting payroll activity for good. Note that our age measure is created from the observed data and as a result it is left censored for establishments active before 1975 - the first year in our series. Subtracting year of birth from the cross section year gives us the age for continuing establishments, but the birth year also allows us to perform all manner of cohort exercises, where we follow a birth cohort over time and view the subsequent exit from the cohort. Detailed information on the age of establishments within firms allow us to construct a detailed picture of the within firm age distribution. It also allows us to construct a firm age measure based on the oldest establishment owned by the firm at any point in time. This measure has proven to be more reliable since it gets around breaks in firm identification numbers due to merger and acquisition activity.

The quality of the industry codes available on the LBD is critical to the construction of a retail sector micro dataset. New establishments, especially those that begin operations between census years often have missing or poor quality industry codes. Between 1% and 10% of records have missing codes in the BR depending on the year

and whether it is a single unit establishment or a multiunit establishment. Valid and improved codes are eventually obtained from direct Census collections or other sources and incorporated into the BR. These clean up activities are concentrated in particular years, usually in preparation for an Economic Census. To maximize the quality of industry codes on the LBD, we choose the best code available for each establishment and take advantage of codes obtained from various sources and at different times. In particular, we use census or survey collected data whenever possible, but we may use an administrative code if no other data is available.<sup>9</sup>

Industry codes are also subject to change for particular establishments over time. This occurs for about 4.5% of the establishments classified as retail at some point in their operational existence. There are two possible reasons for this. First, establishment may legitimately decide to change its type of activity. Second, errors in the data are possible. In both cases we will see a change in the industry code associated with this establishment. To get around this problem we first select all establishments with a valid retail code. Then we assign a unique SIC to the establishment based on Census collected data when available. Alternatively we assign the most recent SIC available on the file. We then select only establishments whose unique SIC falls in the retail sector.

A current limitation of the LBD is that it is based primarily on an SIC basis. From 1976 to 1996, the SIC industry codes were the basis for all Census Bureau publications. From 1997 onward, data has been published on a NAICS basis. While the BR continued to maintain SIC industry codes through 2001, this is no longer the case starting in 2002 resulting in a potential time series break in the LBD data. In addition it is possible that the quality of the SIC codes declined between 1998 and 2001.

The LBD contains information on two important measures of establishment size. They are payroll and employment. Revenue information contained in the BR is not currently on the LBD since it is only available on a regular basis starting in 1994 and then only for single unit firms and at the employer identification number (EIN) level for multiunit firms. While payroll and employment are clearly two important measures of economic activity at the establishment, they only measure two inputs to production.

---

<sup>9</sup> Industry codes are obtained from multiple sources and these can change depending on the year. The most reliable code is obtained from survey forms in Census years. Other sources include administrative IRS and SSA/BLS data.

Success or failure of an establishment or firm should depend on profits, or revenue minus costs. This means that researchers wishing to use detailed data on establishment and firm characteristics must rely on Census Bureau censuses and surveys.

An important feature of the LBD is that it can be easily linked to other Census Bureau datasets. The CFN, PPN, and EIN identifiers in the LBD are all easily merged to the Economic Census or survey data. Since we note that very little establishment detail is available in the LBD itself, it will be important to merge other characteristics (revenue, capital stock, investment, inventories) from other sources. In this paper, we focus only on those measures available in the LBD itself.

Finally, the LBD extends back to 1975. It covers the recessions of the early 80's and early 90's and spans a period of significant technical change and innovation in retail markets. However, this may not be long enough to actually witness much of the structural change in the retail sector. As figure 2.3 shows, employment by chain stores surpassed that of single establishment firms in 1977. It is likely that in order to observe the long run changes in the retail sector we would need a dataset that extended back the 1940's or 50's, when we would expect to find relatively few chain stores and the dominance of "mom and pop" stores. As we show in the following section, different types of geographic markets might be at different stages in this process, and we focus on the long run differences from 1976 to 2000.

#### **4. FINDINGS**

The findings reported in this section are based on the universe of retail establishments selected from the LBD. There are over 1.4 million retail establishments associated with over 1 million firms every year. Our database consists of these records from 1976 to 2000. Data elements include an SIC industry code as well as detailed geography codes, payroll and employment. In 2000, these firms employed more than 22 million workers and generated over \$368.5 billion in payroll. The results presented below are based on county level datasets we constructed from the LBD. We examine changes in the structure of local county level retail markets for all counties and for counties in the three CBSA classifications: metropolitan, micropolitan and rural. Although most of our analysis is at the county level, we require access to the LBD micro data to construct our measures of market structure and firm entry and exit. Publicly



available county level datasets, such as County Business Patterns, would not permit this type of analysis.

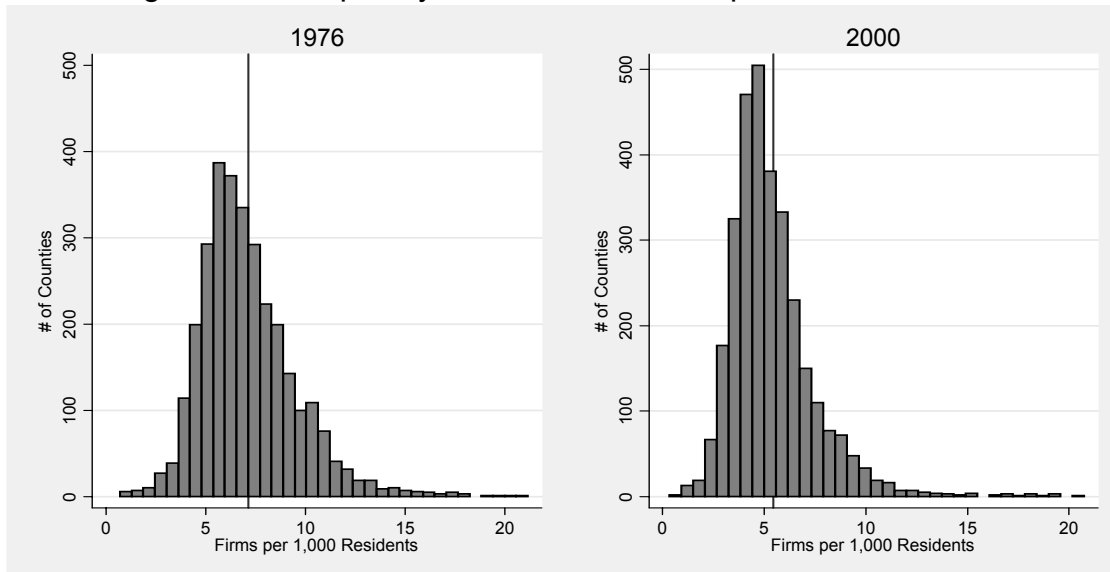
### ***A. The Retail Sector***

#### ***i. Structure of Local Markets***

Our goal in this section is to describe changes in the structure of the retail sector as a whole from the point of view of a local retail market. As described above, we use the county as our definition of a local retail market. We use the LBD to construct a number of summary measures at the county level. The statistics reported in this section are based on these measures.

To start we briefly describe the consolidation that has been going on in the retail sector for some time. We do this by looking at the number of firms and establishments in each county per 1000 county residents. Figure 4.1 shows the frequency distribution of the number of retail firms per 1000 county residents for all U.S. counties in both 1976 and 2000.

**Figure 4.1. Frequency Distributions: Firms per 1000 Residents**



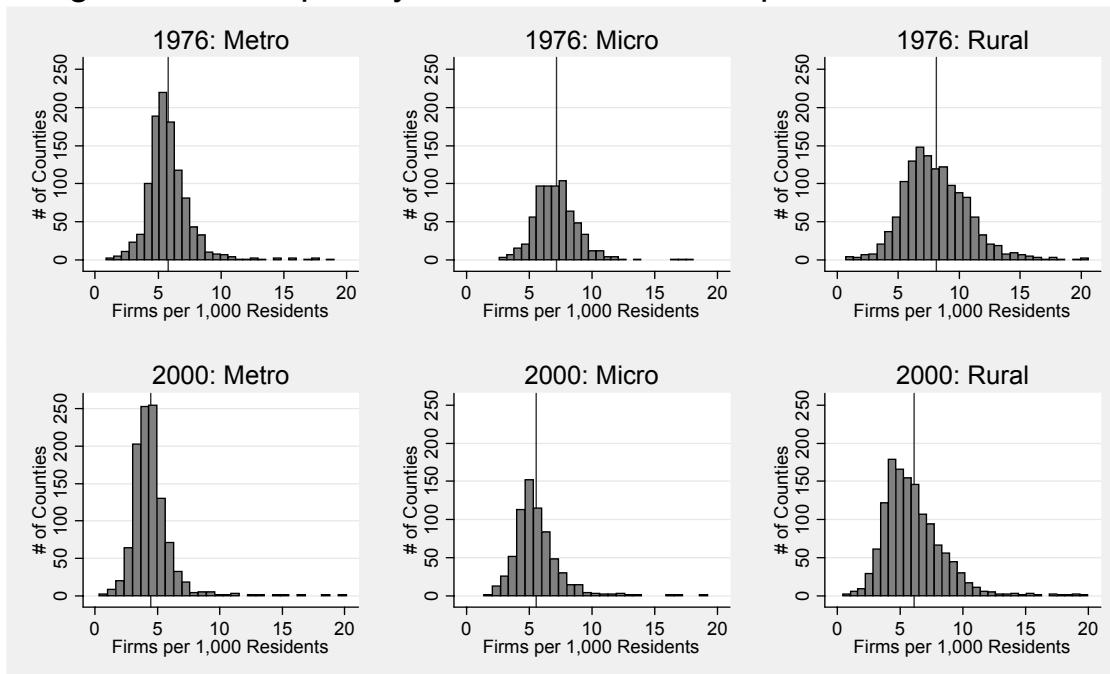
Source: Own Calculations from LBD

Two things stand out. First, as expected the distribution shifts to the left between 1976 and 2000 with the mean number of firms per 1000 residents dropping from 7.12 to 5.42. Interestingly, the variance of the distribution declines as well. Thus, there is less heterogeneity in the number of retail firms per 1000 residents across county retail

markets. This is due to a sharp decline in the number of counties with more than 10 retail firms per 1000 residents.

Following the literature, we are interested in looking at market structure and difference in market structure across markets of different sizes. A convenient method to do this is to split our counties into metropolitan, micropolitan and rural classifications. In figure 4.2, we decompose the distributions in figure 4.1 for these three classes of counties for 1976 and 2000. There are a couple of interesting things to note. First, we observe the pattern discussed in several papers on retail market structure (e.g., Campbell and Hopenhayn (1999) and Dinlersoz (2005)) that smaller (rural) markets have more retail firms per capita than larger (urban) markets. This is true both in 1976 and 2000, but we find that the difference between the types of counties is much smaller in 2000. We also see the variance of the county class distributions tightening over time.

Figure 4.2. Frequency Distributions: Firms per 1000 Residents



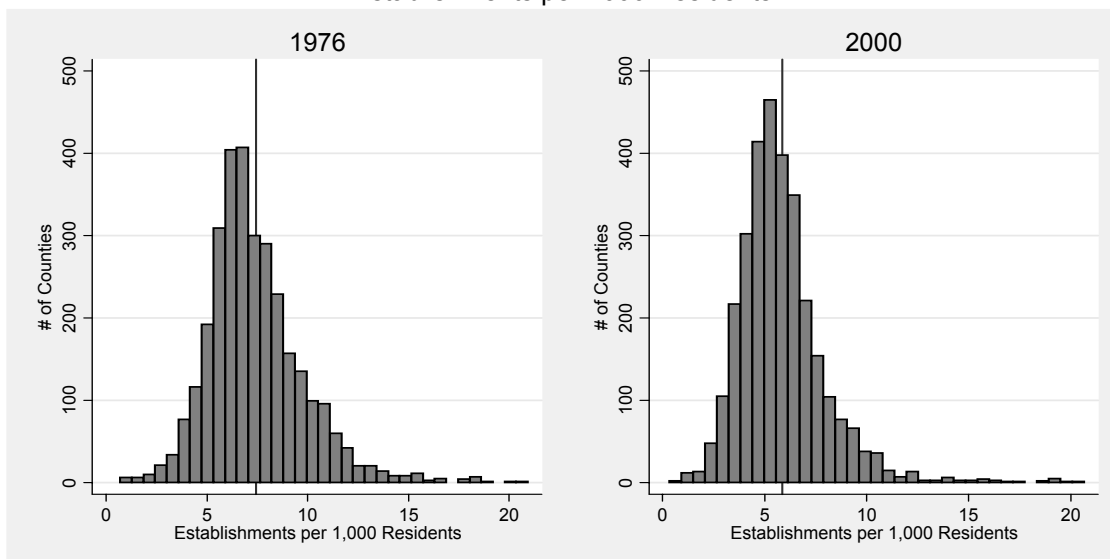
Source: Own Calculations from LBD

The decline in the number of retail stores (establishments) per capita has decreased less than proportionately to the decline in retail firms per capita. This is, of course, due to the growth of chain stores. Figure 4.3 shows the distribution across county markets in the number of retail establishments per 1000 residents. The mean drops from

7.44 to 5.88 retail establishments per 1000 county residents. This represents a 20.9% decline in establishments per capita, whereas firms per capita dropped by 23.9%.

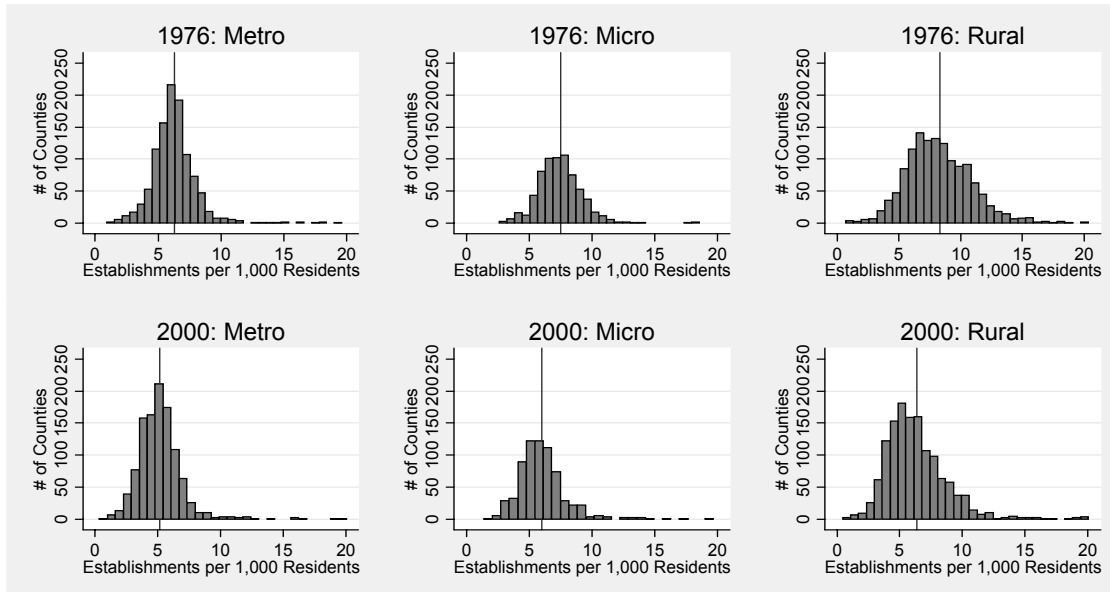
Figure 4.4 shows the change in the distribution of retail establishments per capita broken out by metro, micro and rural counties. As before, we see that the number of establishments per capita decreases with market size. Also, rural counties show the sharpest shift in the distribution of retail establishments per capita. The mean number of establishments per capita in rural counties drops 23.1% between 1976 and 2000. By comparison, the drop is 18.1% and 19.8% in metro and micro counties, respectively.

**Figure 4.3. Frequency Distributions:**  
Establishments per 1000 Residents



Source: Own Calculations from LBD

Figure 4.4. Frequency Distributions:  
Establishments per 1000 Residents

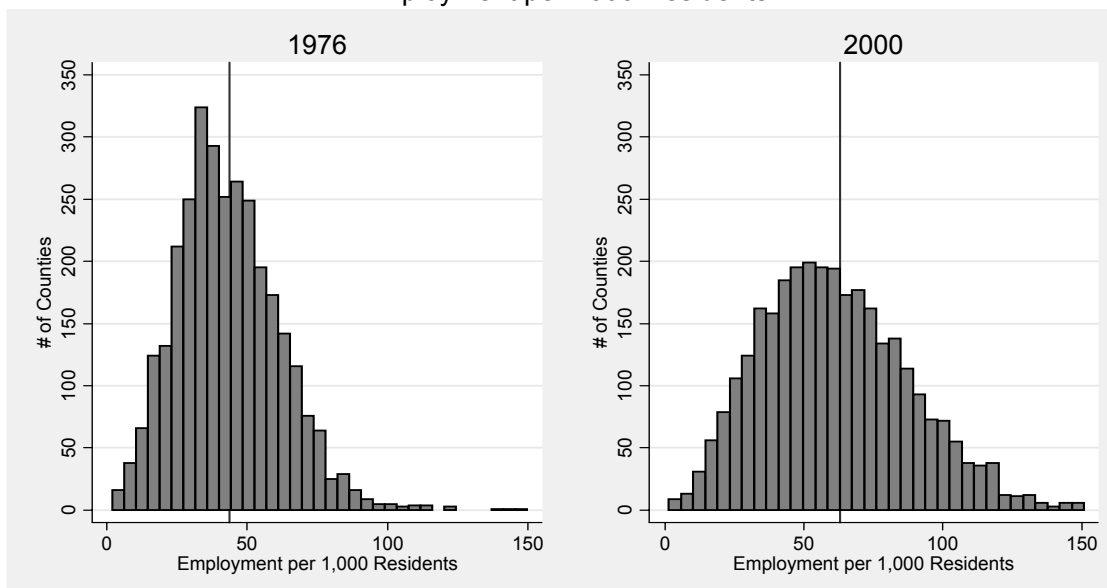


Source: Own Calculations from LBD

While we generally see leftward shifts in the distributions of the number of retail firms and establishments per capita as a result of consolidation and the growth of chains, we see rightward shifts in the number of retail employees. Note that we are using employment as a measure of the scale of retail activity in a county. Recall from the previous section that we only have payroll and employment for all years in the LBD. Retail sales, at the establishment level, are only collected in the Censuses of Retail Trade and are, thus, not available annually for this entire period.

Figure 4.5 shows the distributions of retail employment per 1000 county residents for all counties in 1976 and 2000. This clearly shows the rightward shift in retail employment per capita where the mean goes from 43.8 employees per 1000 residents in 1976 to 63.1 in 2000. As shown in figure 4.6, this rightward shift is much more pronounced in metro and micro counties than it is in rural counties. The increase in mean retail employment per 1000 residents across metro and micro counties was 23.1 (48.3% growth) and 22.7 (47% growth), respectively. For rural counties the increase was only 14.5 employees per 1000 residents (38% growth).

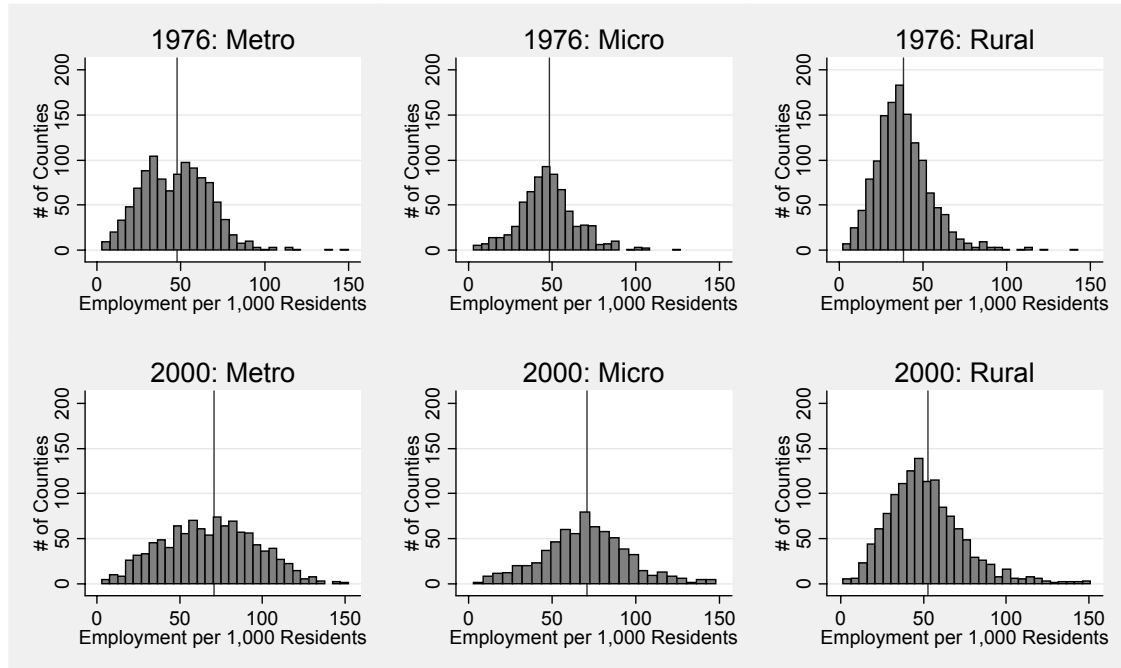
Figure 4.5. Frequency Distributions:  
Employment per 1000 Residents



Source: Own Calculations from LBD

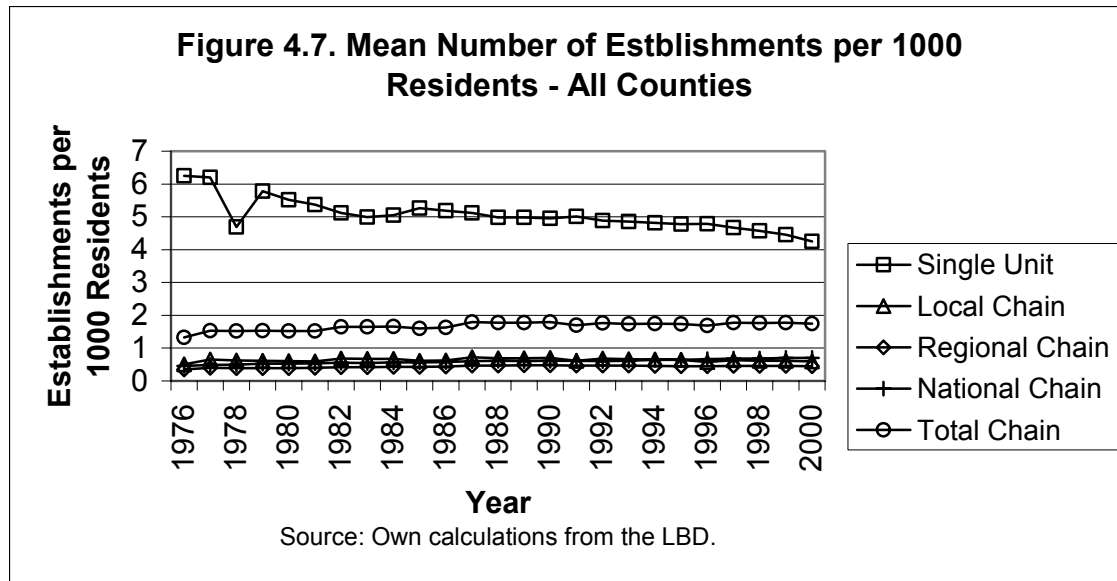
To this point, we've focused on the distinction between three broad classes of markets and examined the differences between establishment and firm growth within them. In order to understand the forces that drive some of these changes we now focus on the distinction between “mom and pop” firms and “chain” stores as defined in Section 3. We examine four types of retail firms. The first is single establishment or “mom and pop” retail firms. We also examine three types of multiple locations or chain stores. Local chains operate two or more retail stores in only one state. Regional chains operate retail stores in between two and ten states. Finally, national chains are defined as those operating retail stores in more than ten states.

Figure 4.6. Frequency Distributions:  
Employment per 1000 Residents



Source: Own Calculations from LBD

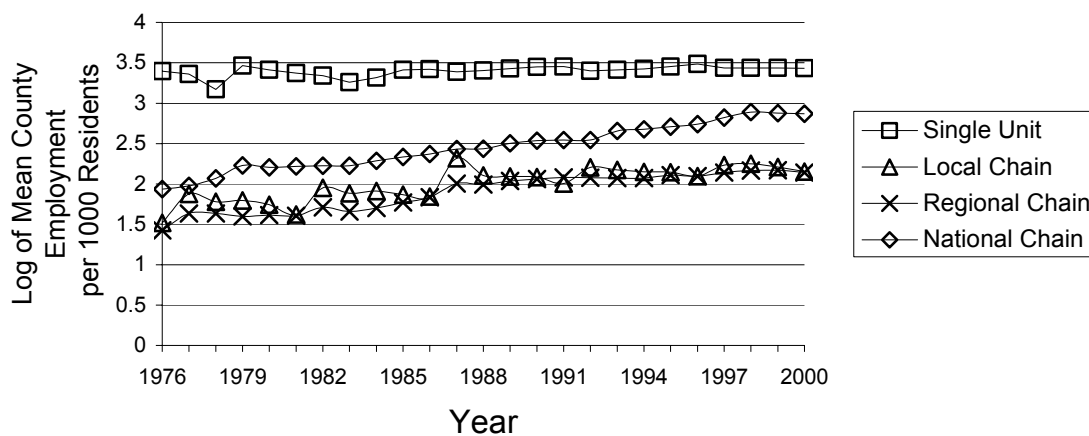
Figure 4.7 shows the mean number of retail establishments per 1000 county residents over the 1976 to 2000 period broken out by these four types of firms. Recall that we show a drop from 7.44 to 5.88 establishments per capita for all counties. The only type of firm that experiences a decline in the number of establishment per capita over the period is the “mom-and-pops”. The number of mom-and-pop stores per 1000 county residents falls from 6.2 to 4.25 stores, or 31.4% during this period. All three types of chains see the number of establishments per capita increase during this period. Overall, chain stores increase from 1.32 to 1.76 establishments per capita, or a 36.6% increase. On average, the composition of firm types in these markets is shifting from mom and pop to chain stores.



Observing changes in the number of establishments during this period is just one part of the story. In section 2, we saw that there is a dramatic increase in retail employment during this period. Figure 4.8 shows how the mean of county employment by firm type grows during this period. Note that the employment at mom and pop stores remains virtually unchanged during this period. Among the types of chains, growth in per capita retail employment is much larger among national chains than that of regional and local chains. During this period, national chains increased employment by almost a full log point (i.e., nearly doubling), and regional and local chains grew by roughly half a log point.

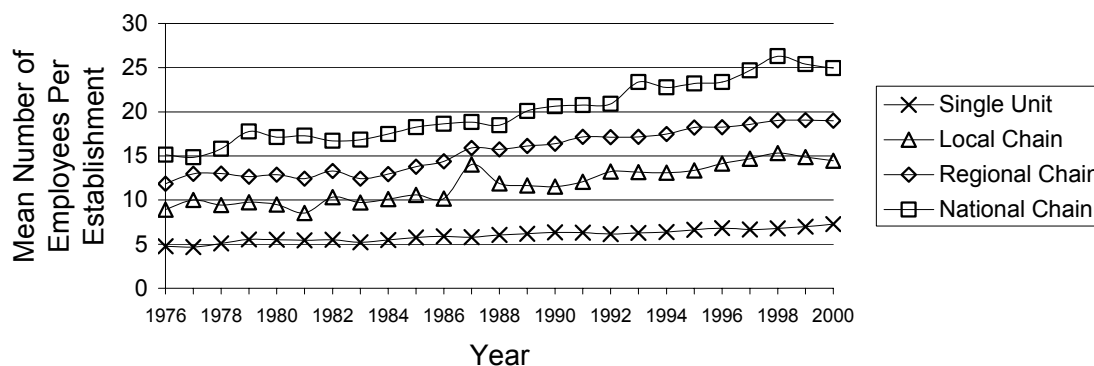
In Figure 4.9, we combine the number of establishments and employment data to examine the shift in establishment size within these types of firms. We find that all types of firms grow on average, even the mom and pop stores. They grow on average since their employment remains relatively constant, but the number of establishments on average declines during this period. However, they only grow from about 5 employees to about 7 employees. We find that firms of all types have larger store sizes during this period, with the largest increase coming from national chains. Local chain stores increase employment from roughly 9 to 15 employees, regional chains from roughly 12 to 19, and national chains from roughly 15 to 25.

Figure 4.8. Mean County Employment per 1000 Residents by Firm Type



Source: Own calculations from the LBD.

4.9. Mean Establishment Size By Firm Type  
All Counties

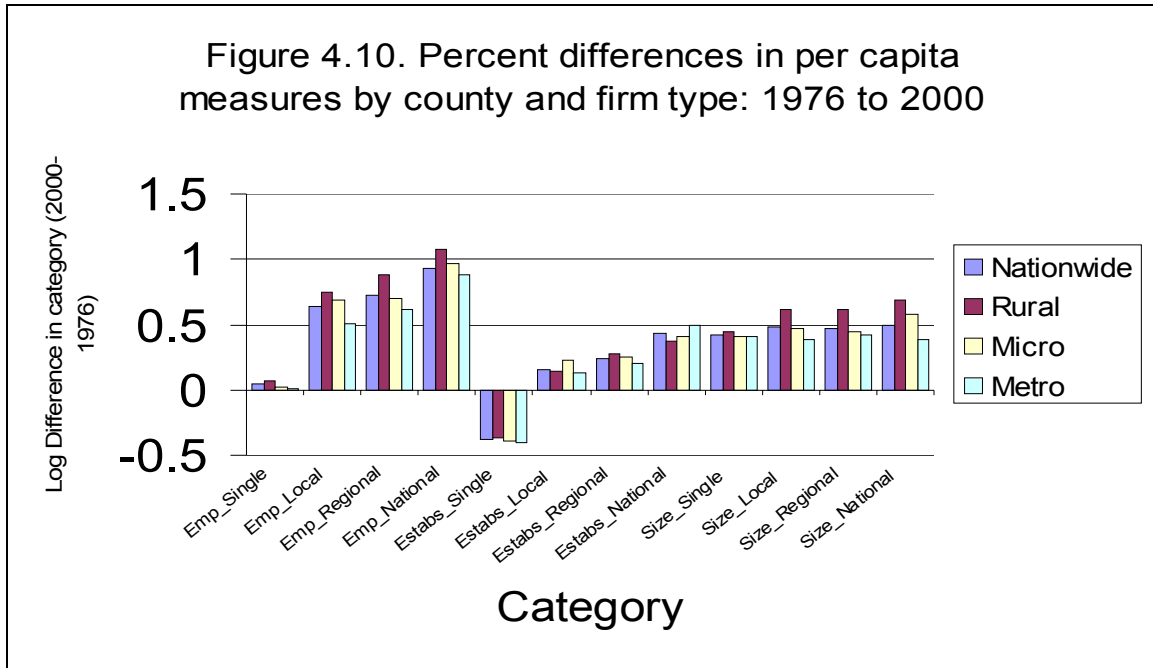


Source: Own Calculations from the LBD

We summarize the results of this section in Figure 4.10. The figure shows the total percent change in employment, number of establishments and establishment size over the 1976 to 2000 period. We examine these changes by both firm and CBSA type. As expected, we see that growth in both employment and the number of establishments per capita is concentrated at retail chains, with a large decrease in single unit establishments and very small increases in single unit employment. For chain stores, we



find that smaller markets experience higher rates of employment growth per 1,000 residents. We find that the average size of retail establishments grew the fastest in rural markets, regardless of type of firm. Competitive forces, present in larger metropolitan markets for a longer time, are now also present in rural markets. Thus, we see the structure of rural retail markets appears, in these data, to be evolving to more closely resemble that of larger urban markets.



## ii. *Firm Entry and Exit Patterns in Local Markets*

In this section we describe firm entry and exit patterns in the retail trade sector. We examine how these measures of producer dynamics differ in levels across different types of geographic markets (metropolitan, micropolitan, and rural) and by type of firm (single, local, regional, and national). We then examine how these patterns have changed over time, focusing on the dynamics between 1976 and 2000.

We define firm entry, exit and continuer rates as in Dunne, Roberts and Samuelson (1988). Namely let  $N_{fct}$  be the number of retail firms of type  $f$  operating in county  $c$  in period  $t$ . Then let  $X_{fct}$  be the number of firms of type  $f$  that were active in county  $c$  in period  $t-1$  but are no longer active in period  $t$ . Similarly, let  $E_{fct}$  be the

number of firms of type  $f$  that were not active in county  $c$  in period  $t-1$ , but are active in period  $t$ . Finally, let  $C_{fct}$  be the number of firms of type  $f$  that were active in county  $c$  in periods  $t-1$  and  $t$ . We define entry, exit and continuer rates as follows:

$$\text{Entry Rate: } ER_{fct} = E_{fct}/N_{ct-1}$$

$$\text{Exit Rate: } XR_{fct} = X_{fct}/N_{ct-1}$$

$$\text{Continuer Rate: } CR_{fct} = C_{fct}/N_{ct-1} \text{ where } f \text{ is in } \{\text{single unit, local chain,}$$

regional chain, national chain}. All rates are relative the number of firms operating in the prior period as in DRS. Note that we are computing the rates for each firm type relative to the total number of retail firms operating within the county. Summing across the firm types gives the county entry, exit and continuer rates. Note that  $ER+CR=1$  by construction. However, in the results reported below our empirical computations don't quite sum to one due to missing data in some county year firm-type pairs. As described in the data section, we identify firm-county pairs so that a firm can be observed entering or exiting multiple geographic markets at the same time. Entry and exit rates are computed by firm type within each county. Net entry rates can be obtained by subtracting the exit rate from the exit rate ( $ER-CR$ ).

In table 2, we present averages of these rates by metropolitan, micropolitan and rural county types. We give the annual average over the entire 1976 to 2000 period and then break out the annual averages for the 1980's and 1990's separately to give a sense of trends in these rates over time. Since single location retailers make up the vast majority of retail firms, even within local county level markets, they contribute the most to total county entry, exit and continuer rates.

**Table 2: Firm Entry and Exit Rates for the U.S. Retail Sector (Averages over CBSA, Selected Years)**

	Single			Local			Regional			National		
	Avg Period	Avg. 80's	Avg. 90's	Avg Period	Avg. 80's	Avg. 90's	Avg Period	Avg. 80's	Avg. 90's	Avg Period	Avg. 80's	Avg. 90's
Entry Rate (ER)												
Rural	0.111	0.117	0.106	0.048	0.049	0.048	0.038	0.036	0.039	0.033	0.030	0.035
Metro	0.116	0.122	0.111	0.022	0.024	0.020	0.019	0.019	0.019	0.021	0.019	0.023
Micro	0.107	0.114	0.101	0.021	0.022	0.021	0.018	0.017	0.019	0.018	0.017	0.019
Exit Rate (XR)												
Rural	0.132	0.154	0.111	0.006	0.006	0.006	0.003	0.004	0.003	0.004	0.003	0.005
Metro	0.127	0.147	0.108	0.008	0.008	0.007	0.005	0.005	0.005	0.006	0.006	0.007
Micro	0.124	0.148	0.104	0.007	0.007	0.007	0.005	0.005	0.005	0.007	0.006	0.007
Continuer Rate (CR)												
Rural	0.694	0.684	0.704	0.068	0.066	0.070	0.039	0.035	0.043	0.041	0.034	0.047
Metro	0.650	0.643	0.656	0.084	0.085	0.084	0.048	0.045	0.050	0.079	0.068	0.089
Micro	0.647	0.637	0.655	0.082	0.082	0.083	0.054	0.050	0.058	0.081	0.073	0.089

Source: Own Calculations from LBD.

Table 2 reveals several striking facts. Average exit rates are generally higher than entry rates for single unit establishments across all CBSA market types. This is similar to what we saw in figure 4.7 that showed the drop in the average number of establishments per capita across all counties. Entry rates exceed exit rates for all three types of chain retailers. Using the average during the period covered by our data, the net annual entry rate for single unit firms is -.011, -.017 and -.021 in metropolitan, micropolitan and rural areas respectively. By contrast, national chain firm net entry rates in metro, micro and rural markets averaged over the entire period are .015, .012 and .029 respectively.

Average annual net entry rates for chain retailers are also significantly higher in rural areas compared to micro and metro areas regardless of the type of chain. On average net entry for national chains are .014 and .017 points higher in rural areas relative to metro and micro areas respectively. These results might simply indicate that chains were already present in micro and metro areas and are only now starting to penetrate rural areas. Alternatively it could reflect differences in barriers to entry and exit due to land costs or local regulations. Finally, looking at trends over time we find that net destruction of single location, “mom-and-pop” firms was particularly important during the 1980s.

Table 3 is the same as Table 2 except all results are employment weighted. Thus, the cells represent employment shares. Again, since we are following the DRS method of measuring entry and exit rates, it's the case the exit employment shares (ESH) plus continuing employment shares (CSH) summed across firm types will be one.

The first thing to note is that weighting by employment reduces the contribution of smaller single location retailers to the entry, exit and continuers rates. It also increases the contribution of continuing retail chain firms. Doms, Jarmin and Klimek (2004) found similar patterns for larger continuing retailers using Economic Census data. They showed the importance of this class of firms along a number of dimensions.

Table 3 shows that net entry contributes to substantial job loss at single location retailers and job gain at chain retail firms. That is the employment share of single deaths far exceeds that of single unit births. An implication of this is that all of the growth in single unit retail employment depicted in figure 2.3 must be coming from the growth of continuing single unit retailers. By contrast, net entry of chains into local markets

contributes considerably to employment growth. Note, however, that the weighted entry rates for chain firms in rural markets are well below the unweighted results. This contrasts with higher weighted continuer rates for chain firms across all market types. This might suggest that chain firms initially start small in rural markets.<sup>10</sup>

We also find some interesting changes over time in the continuer share of employment across the different firm types. Continuing single unit and local chain retailers make up a smaller average share of employment in the 1990's than they did in the 1980's. Continuing regional and national chains, on the other hand, see their employment shares increase in the 90's relative to the 80's. This is particularly true for national chains. On average, the annual employment share of continuing national chains grew by .027, .044 and .045 in rural, metro and micro areas respectively. This is an indication of the growth and increased presence that these chains have across local markets as well as their growth in the share of activity.

**Table 3: Employment Weighted Firm Entry and Exit Rates for the U.S. Retail Sector (Averages over CBSA, Selected Years)**

	Single			Local			Regional			National		
	Avg Period	Avg. 80's	Avg. 90's	Avg Period	Avg. 80's	Avg. 90's	Avg Period	Avg. 80's	Avg. 90's	Avg Period	Avg. 80's	Avg. 90's
Entrant Emp Share (ESH)												
Rural	0.044	0.049	0.040	0.028	0.030	0.027	0.022	0.023	0.022	0.019	0.019	0.020
Metro	0.034	0.038	0.030	0.017	0.019	0.015	0.016	0.017	0.016	0.019	0.018	0.020
Micro	0.035	0.040	0.030	0.018	0.019	0.017	0.016	0.017	0.016	0.016	0.017	0.016
Exit Emp Share (XSH)												
Rural	0.078	0.098	0.060	0.007	0.007	0.007	0.005	0.005	0.005	0.005	0.004	0.006
Metro	0.056	0.071	0.042	0.009	0.009	0.008	0.007	0.007	0.008	0.009	0.008	0.010
Micro	0.061	0.078	0.045	0.008	0.009	0.008	0.007	0.007	0.007	0.008	0.008	0.009
Continuer Emp Share (CSH)												
Rural	0.578	0.593	0.564	0.122	0.121	0.123	0.079	0.070	0.087	0.085	0.071	0.098
Metro	0.421	0.442	0.402	0.152	0.157	0.149	0.121	0.117	0.126	0.238	0.214	0.259
Micro	0.458	0.478	0.441	0.152	0.155	0.149	0.120	0.115	0.125	0.204	0.180	0.225

Source: Own Calculations from LBD.

This section has shown that there are significant differences in turnover rates across metropolitan, micropolitan and rural areas and across firm types. There are also differences in trends over time. Overall, they provide additional evidence of how chain stores increasingly dominate retail activity across all types of U.S. counties.

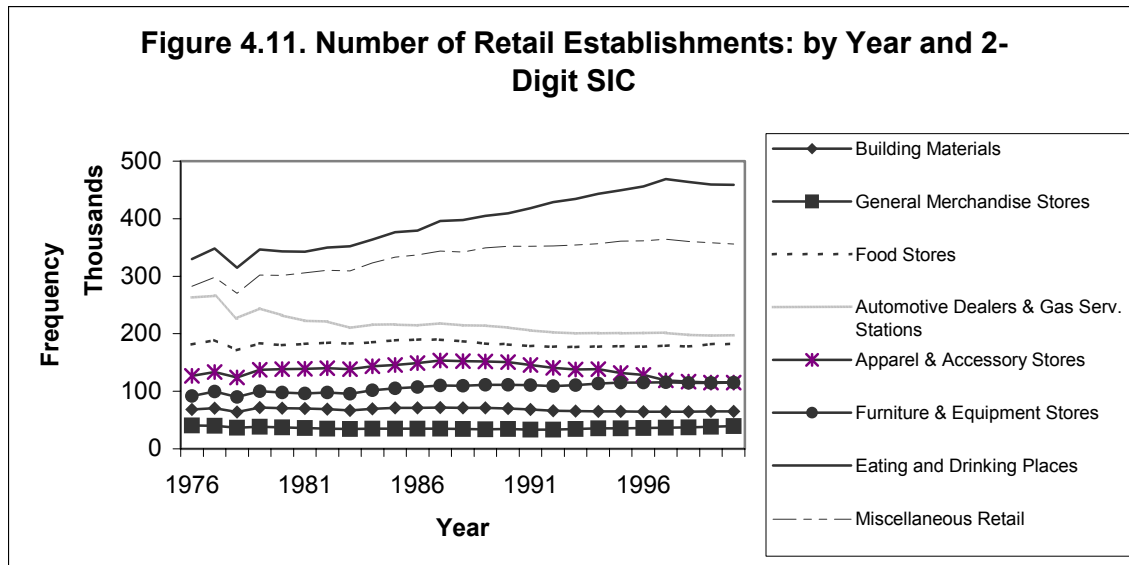
<sup>10</sup> Clearly much more needs to be done to fully understand the post entry growth dynamics of chain and single location retail firms in these local markets. We had hoped to complete this analysis for this draft, but could not. We will be addressing this in future work.

## ***B. Selected 2-Digit SIC Retail Industries***

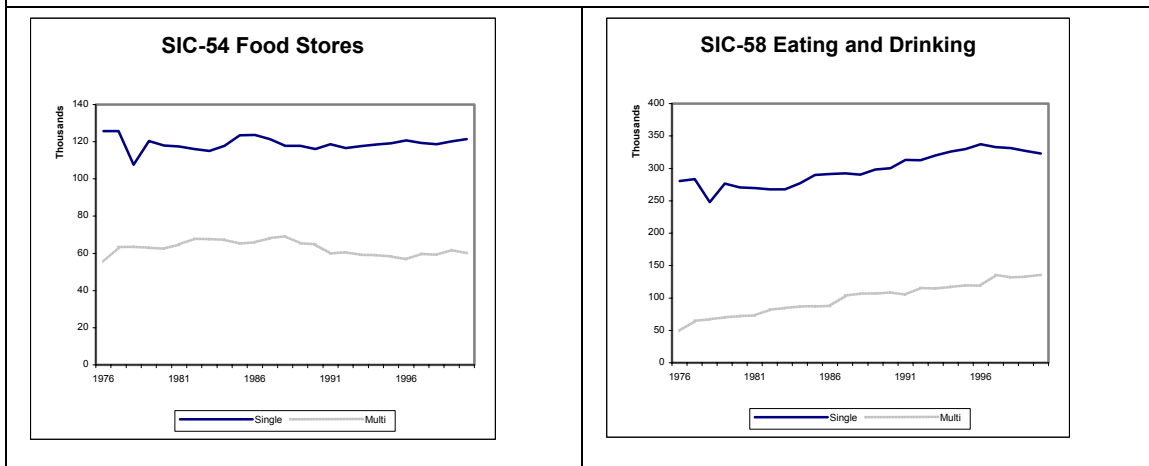
All of our previous results have been for the retail sector as a whole, but we recognize that differences across retail industries is also going to be an important factor in changes in the structure and turnover patterns in retail. In this section we focus on two broad two-digit retail SIC industries: SIC54, Food Stores and SIC58 Eating and Drinking Places.

### ***i. The Structure of Local Markets***

The selection of these two industries is driven primarily by their size and differences in their underlying dynamics. Figure 4.11 below shows that the number of Eating and Drinking establishments has grown tremendously between 1976 and 2000, by approximately 33%. Figure 4.12 shows that the industry is also experiencing significant consolidation with the number of chain stores relative to single unit stores increasing by approximately 66%. By contrast the number of food stores has remained largely the same with barely a 0.3% growth during the same period. The share of chain to single unit stores has also remained largely unchanged with a growth of approximately 8%. Both industries have experienced very large growth in employment at 129% and 82% respectively.

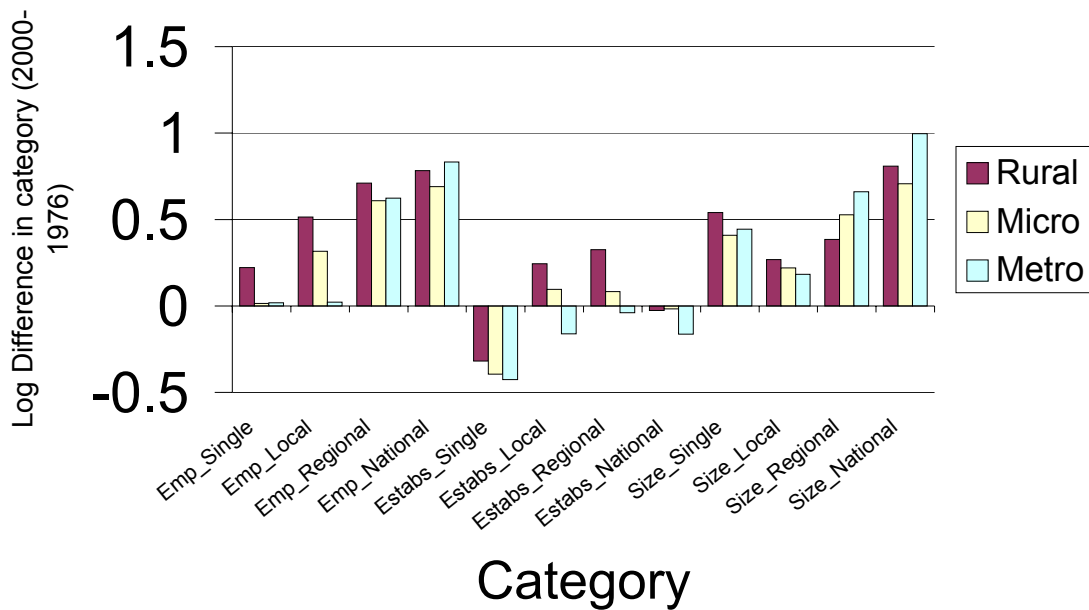


**Figure 4.12 Number of Single and Multi-unit for Select 2-digit SICs**



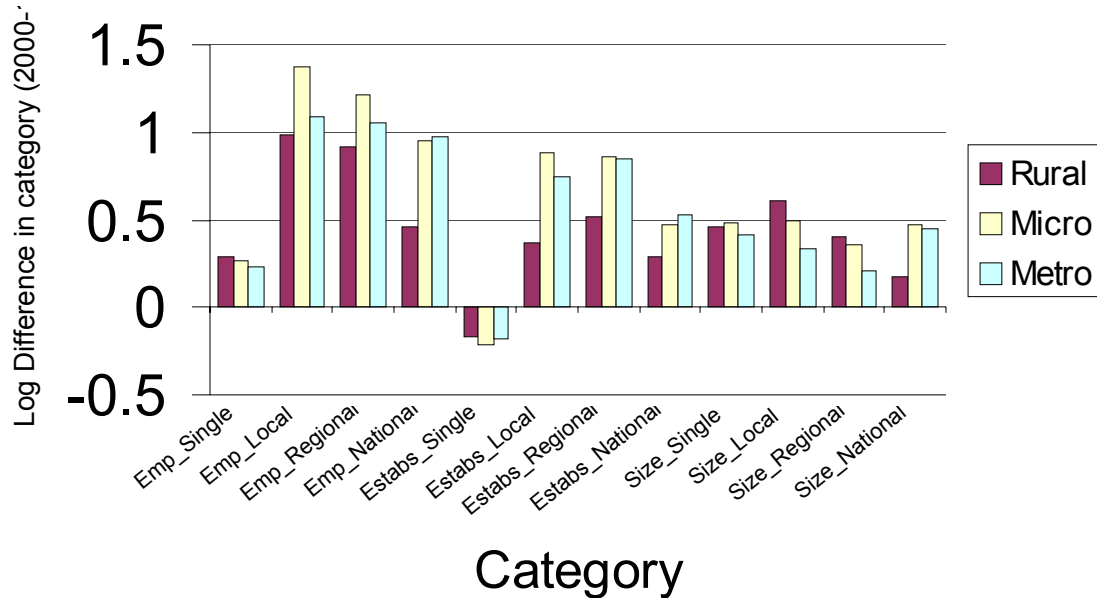
Figures 4.13 and 4.14 combine measures of the change in employment, number of establishments, and size by type of market and firm respectively for Food Stores and Eating and Drinking Places. These are similar to figure 4.10 above. As expected we find significant differences across these industries but also similarities. The largest differences lie in our measures of establishment dynamics. We find that the drop in the number of “mom-and-pop” stores per 1,000 residents is considerably larger in the food stores industry relative to eating and drinking places. This is perhaps an indication that consolidation is relatively more important in the food store industry. We also find different dynamics across chain stores. We find that most of the growth in the number of chain stores in the food store industry is taking place in rural areas. There is relatively small growth and actually negative growth in micro and metro areas respectively. By contrast the number of eating and drinking chain establishments is growing across the board with the largest growth taking place in micro and metro areas. Differences in patterns across market types and industry might be related to differences in land accessibility and store surface requirements.

Figure 4.13. Percent differences in per capita measures  
by county and firm type: 1976 to 2000  
Food Stores



As before, we find that measures of employment growth are robust to the types of geographic markets. Most of the growth in employment is coming from chain stores. However, it is interesting to note that there is hardly any growth in single unit employment in the food store industry except in rural areas. We also find significant differences across types of chain. Our data shows that national chains experience the largest employment growth in the food store industry. By contrast local and regional chains experience the largest employment growth in Eating and Drinking Places. Finally, eating and drinking places are experiencing the largest employment growth in micro and metro areas. Food stores for the most part are experiencing the largest employment growth in the rural areas.

Figure 4.14. Percent differences in per capita  
measures  
by county and firm type: 1976 to 2000  
Eating and Drinking Establishments



To summarize, we find that consolidation takes different forms across industries and types of markets. Mom-and-Pop stores seem to have a harder time coexisting with chain stores in the food store industry regardless of the type of market. The number of chain stores is hardly increasing in the food store industry except in rural areas. Finally we find that smaller markets experience higher levels of employment growth per 1,000 residents in the food store industry. The reverse is true for eating and drinking places.

#### ***ii. Firm Entry and Exit Patterns in Local Retail***

In Tables 4 and 5 we present entry, exit and continuer rates for food stores and eating and drinking places, respectively. These are the equivalents of table 2 above. These tables reveal several things. First, firm turnover rates and net entry rates differ considerably across these 2-digit industries and across metro micro and rural areas. On average firm turnover rates are approximately .061 points higher for the Eating and Drinking Places industry. Most of this difference comes from higher entry and exit rates



of single unit establishments. Higher turnover rates in this industry might simply reflect differences in entry and exit costs. In terms of net entry we find that both industries exhibit net loss of single units during the 80s and a positive reversal in the 90s.

The patterns for chain stores differ somewhat from those just described for single units. We find that turnover rates are in general higher for chain stores in the food store industry particularly in metro and micro areas. On average turnover rate in these areas are .069 and .054 in the Food Store and Eating and Drinking Places respectively. The relatively low entry rates of food stores in rural markets might reflect differences in market dynamics and competitive pressures or simply that chain food stores are only slowly penetrating these markets.

**Table 4: Firm Entry and Exit Rates for Food Stores (Averages over CBSA, Selected Years)**

	Single			Local			Regional			National		
	Avg. Period	Avg. 80's	Avg. 90's	Avg. Period	Avg. 80's	Avg. 90's	Avg. Period	Avg. 80's	Avg. 90's	Avg. Period	Avg. 80's	Avg. 90's
Entry Rate (ER)												
Rural	0.109	0.114	0.104	0.053	0.055	0.052	0.040	0.038	0.042	0.019	0.020	0.019
Metro	0.123	0.125	0.121	0.060	0.060	0.061	0.056	0.054	0.058	0.052	0.050	0.054
Micro	0.112	0.117	0.108	0.079	0.079	0.079	0.077	0.075	0.078	0.076	0.075	0.077
Exit Rate (XR)												
Rural	0.114	0.135	0.096	0.006	0.006	0.007	0.004	0.004	0.004	0.002	0.002	0.001
Metro	0.128	0.147	0.111	0.011	0.011	0.010	0.007	0.007	0.007	0.005	0.006	0.005
Micro	0.122	0.143	0.102	0.011	0.011	0.011	0.009	0.009	0.009	0.006	0.007	0.004
Continuer Rate (CR)												
Rural	0.654	0.649	0.658	0.085	0.080	0.089	0.060	0.050	0.069	0.021	0.021	0.022
Metro	0.640	0.627	0.651	0.110	0.111	0.109	0.072	0.069	0.076	0.070	0.065	0.074
Micro	0.620	0.611	0.627	0.117	0.115	0.118	0.099	0.092	0.105	0.076	0.070	0.081

Source: Own Calculations from LBD.

**Table 5: Firm Entry and Exit Rates for Eating and Drinking (Averages over CBSA, Selected Years)**

	Single			Local			Regional			National		
	Avg. Period	Avg. 80's	Avg. 90's	Avg. Period	Avg. 80's	Avg. 90's	Avg. Period	Avg. 80's	Avg. 90's	Avg. Period	Avg. 80's	Avg. 90's
Entry Rate (ER)												
Rural	0.174	0.184	0.166	0.057	0.056	0.059	0.039	0.032	0.046	0.027	0.023	0.031
Metro	0.163	0.174	0.152	0.047	0.051	0.044	0.039	0.039	0.039	0.038	0.038	0.037
Micro	0.154	0.166	0.144	0.064	0.067	0.061	0.060	0.061	0.059	0.058	0.061	0.056
Exit Rate (XR)												
Rural	0.176	0.203	0.151	0.004	0.005	0.004	0.002	0.002	0.003	0.002	0.001	0.003
Metro	0.160	0.186	0.137	0.008	0.009	0.008	0.005	0.005	0.005	0.006	0.005	0.007
Micro	0.160	0.189	0.134	0.008	0.009	0.008	0.005	0.005	0.005	0.006	0.005	0.007
Continuer Rate (CR)												
Rural	0.687	0.674	0.699	0.048	0.045	0.052	0.028	0.021	0.035	0.017	0.014	0.019
Metro	0.661	0.649	0.672	0.084	0.080	0.088	0.051	0.047	0.053	0.056	0.054	0.057
Micro	0.652	0.642	0.661	0.088	0.080	0.094	0.061	0.054	0.067	0.052	0.051	0.053

Source: Own Calculations from LBD.

Note that despite the fact that turnover rates for chains operating eating and drinking establishments are lower than for chains operating food stores, net entry of establishments remains considerably higher for Eating and Drinking Places compared to

Food Stores (results not shown). This reflects the considerable growth in the number of stores and chains in the Eating and Drinking Places industry.

## **5. CONCLUSION**

In this paper we have described our efforts to examine the evolution of local retail markets using recently constructed longitudinal data from the U.S. Census Bureau. The structure of the U.S. retail sector has been undergoing dramatic changes since the end of World War II. The data we use, unfortunately, does not extend back that far. However, the Longitudinal Business Database (LBD) does contain annual data on all retail establishments with paid employees going back to 1975. No other dataset has universe information for such a long time series. The LBD also allows us to measure firm entry and exit in local markets since it contains detailed industry, geography and firm ownership information.

We used these unique data to examine the changing structure of retail markets. We paid especially close attention to the growing role of chain store retailers. Retail firms that operate more than one retail store accounted for nearly all growth in retail employment and for all the growth in the number of retail establishments over the period we studied. This was true in rural, micro and metropolitan markets.

When we examine the distribution of the number of retail firms and establishments per capita across local, county level, markets, we find that the mean has shifted to the left and the spread has declined between 1976 and 2000. This reflects the ongoing consolidation of retail markets and the displacement of single unit, “mom-and-pop” retailers by chains. This trend is seen in all the market types we examined, but is especially pronounced in rural markets.

We also used the LBD to examine the entry and exit dynamics that underlie the structural changes we observed in U.S. retail markets. These show considerable churning, especially among single location, “mom-and-pop” retailers. On a weighted basis, we see that continuing national retail chains are increasing their share of retail employment over time. This is true across all market types. However, the share of activity (as measured by employment) at retail chains still differs considerably between types of markets

Finally, and as a prelude to more detailed analyses we will be undertaking in the future, we examine structural change and dynamics in two select retail 2 digit SIC major groups: Food Stores and Eating and Drinking Places. This exercise pointed to interesting difference across the industry groups. First, eating and drinking places showed much more employment growth over the period. Interestingly, most of the per capita employment growth at food stores was concentrated among regional and national chains. Eating and drinking places showed strong employment growth across all firm types, although like the rest of retail, growth was slower among single units.

This paper is just a start. We will be undertaking more rigorous analyses of the evolution of retail markets. However, many measurement challenges remain. A full understanding of retail market evolution requires more information on firm performance than is available in the LBD. Other sources can provide some of this information. However, they lack either, or both, of the LBD's universal coverage and long time series of annual data. Thus, the LBD will be an indispensable tool for researchers trying to understand the evolution of retail markets.

## References

- Bagwell, Kyle; Ramey, Garey; and Spulber, Daniel F. "Dynamic Retail Price and Investment Competition." *RAND Journal of Economics*, Summer 1997, 28(2), pp. 207-227.
- Basker, Emek. "Job Creation or Destruction? Labor-Market Effects of Wal-Mart Expansion." *Review of Economics and Statistics*, forthcoming 2005.
- Bayard, Kimberly and Klimek, Shawn D., "Creating a Historical Bridge for Manufacturing between the Standard Industrial System and the North American Industry Classification System," *Proceedings of the Joint Statistical Meetings*, American Statistical Association, Alexandria, VA, 2003.
- Dinlersoz, Emin M. "Firm Organization and the Structure of Retail Markets" *Journal of Economics and Management Strategy*, Summer 2004, 13(2), pp.207-240.
- Doms, Mark E.; Jarmin, Ron S. and Klimek, Shawn D. "Information technology investment and firm performance in US retail trade." *Economics of Innovation and New Technology*, October 2004, 13(7), pp. 595-613.
- Dunne, Timothy; Roberts, Mark J. and Samuelson, Larry. "Patterns of Firm Entry and Exit in U.S. Manufacturing Industries." *RAND Journal of Economics*, Winter 1988, 19(4), pp. 495-515.
- Ellickson, Paul B. "Supermarkets as a Natural Oligopoly." mimeo Duke University, 2004.
- Foster, Lucia S.; Haltiwanger, John and Krizan, C.J. "Market Selection, Reallocation and Restructuring in the U.S. Retail Trade Sector in the 1990s." mimeo U.S. Census Bureau, 2004.
- Holmes, Thomas J. "Bar Codes Lead to Frequent Deliveries and Superstores." *RAND Journal of Economics*, Winter 2001, 34(4), pp. 708-725.
- Jarmin, Ron S. and Miranda, Javier. "The Longitudinal Research Database." CES Working Paper CES-WP-02-17, 2002.
- McKinsey Global Institute. How IT Enables Productivity Growth, 2002.
- Miranda, Javier. "LBD Documentation: Geography." mimeo U.S. Census Bureau, 2001.
- Office of Management and Budget, "Standards for Defining Metropolitan and Micropolitan Statistical Areas." *Federal Register*, December 2000, 65(249), pp. 82228-38.

Sieling, Mark; Friedman, Brian and Dumas, Mark. "Labor productivity in the retail trade industry 1987-99." *Monthly Labor Review Online*, December 2001, 124(12), pp. 3-14.

U.S. Bureau of the Census, *Census of Business, 1967; Vol. I, Retail Trade-Subject Reports*, U.S. Government Printing Office, Washington, D.C., 1971.

U.S. Bureau of the Census, *Statistical Abstract of the United States: 1994* (114<sup>th</sup> edition) Washington, DC, 1994.