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The Evolution of National Retail Chains: How We Got Here[*]

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Abstract

The growth and dominance of large national chains is a ubiquitous feature of the U.S. retail sector. The increasing dominance of these chains, and their impact on the size distribution and firm turnover rates in retail trade has been documented by Jarmin et al. (2005). Moreover, these large, national chains drove most of the recent productivity growth in the U.S. retail trade industry as more productive entering establishments affiliated with national chains displaced much less productive exiting single-unit firms (Foster et al. (2006)). An open question is the factors that prompted these dynamics and in turn the dynamics that led some national chains like Wal-Mart, Starbucks and Olive Garden to succeed dramatically over the last few decades. Holmes (2005) explores some of these issues by examining the location dynamics of Wal-Mart establishments in the U.S. We build on this literature by following the paths of retail firms and establishments from 1977 to 2002 using establishment and firm-level data from the Census of Retail Trade and the Longitudinal Business Database. We dissect the shift towards large national chains on several margins. We explore the differences in entry and exit as well as job creation and destruction patterns at the establishment and firm level. We find that over this period there is a consistently high rate of employment-weighted entry and job creation by the establishments of single-unit firms and large, national firms (with the rates for single-unit firms higher than that of large, national firms). Moreover, net growth is positive for both single-unit firms and large national firms but much higher for the large national firms. Underlying this difference is far lower exit and job destruction rates of establishments from national chains. Thus, the story of the increased dominance of national chains is not the paucity of new single-unit firms but rather the much greater stability of the new establishments belonging to national chains relative to their single-unit counterparts. Given the increasing dominant role of these chains, we also dissect the paths to success of the largest national chains in 2002. In particular, we look for patterns in the geographic expansion, size, and transition from privately-held to publicly-owned ownership for firms that came to dominate the retail trade industry by the end of this twenty-five year period.

1. Introduction

A ubiquitous feature of the U.S. retail industry is the growth and dominance of large national chains in the retail industry. The best known is Wal-Mart but large, national chains in many different retail sectors have become paramount. Jarmin et al. (2005) document the increasing preeminence of national chains and their impact on the size distribution and firm turnover rates in retail trade. Foster et al. (2006) show that virtually all of the productivity growth in the U.S. retail trade market over the 1990s is due to more productive entering establishments affiliated with national chains displacing much less productive exiting establishments that are "mom and pop" single-unit establishment firms. An open question is the factors that prompted these dynamics and in turn the factors that led some national chains like Wal-Mart, Starbucks and Olive Garden to succeed dramatically over the last few decades. Some existing studies have started to investigate these patterns. For example, Holmes (2006) explores some of the tradeoffs affecting Wal-Mart as it opens new establishments in the U.S. and how these factors influenced the overall location pattern followed by the firm.

We build on this literature by following the growth paths of retail firms from 1977 to 2002 using establishment and firm-level data from the Census of Retail Trade and the Longitudinal Business Database. We begin by exploring the paths followed by firms of different chain types – comparing for example the dynamics of single-unit establishment firms to those we designate as Mega firms (firms that operate in at least 15 states). Consistent with the recent literature, we find that Mega firms increasingly dominate the retail trade sector and exhibit different patterns of volatility as measured by job creation and destruction as well as entry and exit. Given their increasingly dominant role, we then focus our attention on the Mega firms to understand the patterns of expansion for such firms. In particular, we look for patterns

in the geographic expansion, size, transition from privately-held to publicly-owned, and propensity to expand via establishment entry vs. acquisitions for the firms that came to dominate the retail trade industry over this twenty-five year period. The approach in this analysis is descriptive as it is our objective to provide a set of basic facts that underlie this fundamental change in the structure of retail trade that can be used to develop and test hypotheses for the factors underlying this change.

The paper proceeds as follows. Section 2 provides a brief literature review to help put the questions and approach of the paper into context. Section 3 describes the data used in the analysis. Section 4 presents an overview of the patterns of structural change in the retail trade sector. This section very much builds on the recent literature and it is clear from this section as well as the recent literature that large, national chain retail firms increasingly dominate the retail trade sector. Section 5 provides an analysis of the patterns of job creation and destruction and entry and exit at both the establishment and firm level across chain types. Section 6 begins the exploration of the evolution of the large, national firms that became paramount in the retail trade sector by 2002. Concluding remarks are given in section 7.

2. Literature Review

As noted in the introduction, the dramatic changes in the retail trade sector have yielded a burgeoning literature documenting and exploring the factors underlying the transformation. Jarmin et al. (2004 and 2005) take advantage of the newly developed Longitudinal Business Database (LBD) to document and analyze the patterns of growth and change in the retail trade sector. They find an increasingly dominant role of large, national chains in retail trade activity as measured by payroll and employment. Moreover, they quantify the extent and patterns of

firm and establishment entry and exit in the retail trade sector. Not surprisingly, entry and exit rates are relatively high in retail trade (e.g., compared to manufacturing) but they also find that entering establishments are much larger in terms of relative size to incumbents as compared to their manufacturing counterparts. They also show that the patterns of activity and change vary across market size and type. Rural areas are still served by a relatively large number of single-unit establishment firms but in rural areas such firms are experiencing net losses. In larger markets, there is higher firm turnover. They also find that single-unit firms and large, national chains are more likely to coexist in some industries (such as Eating and Drinking) and less likely in others (like General Merchandise stores).

One outstanding example of the dramatic changes among retail trade firms is Wal-Mart. Not surprisingly, some of the literature documenting and studying the evolving structure of the sector focuses on Wal-Mart. Basker (2005) studies the labor market effects of Wal-Mart entry into a local market. She finds that although there is an initial increase in employment in the local area, over the subsequent five years a Wal-Mart entry yields exits and contractions by competitors. She also finds evidence for upstream effects via a decline in wholesalers' employment. Holmes (2006) also explores Wal-Mart entry dynamics but with a different perspective. Holmes documents the geographic pattern of expansion of Wal-Mart. Wal-Mart started in Bentonville, Arkansas and its expansion path shows that it first expanded into local, then regional and then finally national markets. Holmes models the firms expansion decision as a tradeoff between taking advantage of the economies of density (favors operations in close proximity) versus locating in the market with the highest quality (unlikely to favor operations in close proximity).

These dramatic changes in the structure of the retail trade sector have been associated with the productivity growth in the retail trade sector over this period of time. Foster et al.

(2006) show that virtually all of the labor productivity growth in the U.S. retail trade sector over the 1990s is accounted for by more productive entering establishments displacing much less productive exiting establishments. Interestingly, the large productivity gap between low productivity exiting *single-unit* establishments and entering high productivity establishments from large, *national chains* plays a disproportionate role in these dynamics.

While much has been learned from this burgeoning literature, our understanding of the structural changes in the retail trade sector is still limited. The recent development of the LBD (see Jarmin and Miranda, 2002) has provided a rich new resource in its own right for the study of these issues (as is evident in Jarmin et al. (2004, 2005)) but also greatly enhances the ability to use the Census of Retail Trade at the establishment and firm level for an extended period of time. The LBD provides the longitudinal establishment and firm identifiers to conduct longitudinal analysis of firms over an extended period of time (1977 to the present). The current paper takes advantage of the integration of the LBD with the Census of Retail Trade (CRT) from 1977 to 2002 to expand our understanding of the major structural changes ongoing in the retail trade sector.[1]

3. Data and Measurement Issues

The empirical analysis in this paper uses data from the Census of Retail Trade (CRT). The Census Bureau conducts a survey of retail trade establishments every five years (those years ending in '2' and '7'). The survey questionnaire is mailed out to all large and medium-sized firms and generally all firms that operate multiple establishments; most very small firms are excused from answering the questionnaire. The data for these very small firms come from two

sources: either a Census sample of these very small firms or administrative records from other federal agencies. We use both reported data and administrative data in our empirical exercises because there is no reason to suppose that the administrative records data are inferior to the reported data for the variables being used in this study.

The CRT contains data on establishments concerning the kind of business, physical location, sales in dollars, annual and first quarter payroll, and employment for the pay period including March 12th. We create a measure of real sales by deflating nominal sales by the Consumer Price Index in each year (in 2002 dollars).[2] High quality establishment-level data are available from the CRT for the period 1977-2002. During this period, the industry classification system used by Census in collecting data switched from the Standard Industrial Classification (SIC) to North American Industry Classification System (NAICS). In order to ensure comparability across time, we define the retail trade sector using the SIC definition for our entire sample period. Fortunately, the Census Bureau maintained SIC industry information in the NAICS transition year (1997) so creating the 1997 retail trade sector under SIC is straightforward. It is slightly more difficult to create the 2002 retail trade sector under SIC. We have created a rough version of 2002 retail trade sector under SIC by applying 1997 SIC codes to continuing establishments in 2002 and using a SIC-NAICS concordance to translate the industry codes for establishment births in 2002 (see the Data Appendix for more details). To the extent that we cannot remove all establishments that first appear in the 2002 CRT and are in NAICS-only industries, our sample (slightly) overestimates the 2002 retail trade sector on an

[1] It is the development of the LBD that permits the longitudinal analysis of the CRT from 1977-2002. In Foster et. al. (2006) we only used the CRT for 1987-97 given that the LBD had not been developed at the time we conducted that analysis.

[2] In future drafts of this paper we hope to use the four-digit industry price deflator from BLS instead of the Consumer Price Index. In like fashion, in future drafts we plan to examine productivity patterns which requires analysis within industries.

SIC consistent basis.

The retail trade sector grows significantly during our sample period, but roughly speaking, there are about 1.5 million establishments with 20 million paid employees generating $2.5 trillion in real sales in retail trade in a given year. The CRT also collects information on firm ownership of establishments. There are approximately 1 million firms in retail trade in each year in our sample. It is apparent from the relative magnitudes of the number of firms and establishments that most firms in retail trade are single-unit establishments.

We restrict our sample to establishments that can be matched to the LBD because we will use LBD data in part of our analysis. We further restrict our analysis to establishments that have positive employment (and sales and payroll). This restriction on positive employment helps us to increase the quality of our data in early Census years. Our sample exhibits quantitatively similar time series patterns as the published data of the full universe of the retail trade sector.

We define chains in terms of the number of states in which a firm has establishments operating (or the number of establishments in operation for single-state firms). We classify firms into five chain types. Firms that have a single establishment are classified as Single. Firms that have multiple establishments operating in a single state are classified as Local. Firms that have multiple establishments operating over 2 to 5 states are classified as Regional. Firms that have multiple establishments operating over 6 to 14 states are classified as National. Finally, firms that have multiple establishments operating over 15 or more states are classified as Mega firms. The cutoffs of these different types of chains in terms of number of states are arbitrary, but as will become clear, are quite instructive for characterizing the changing structure of the U.S. retail trade industry.

In some of our analysis, we consider whether the firm is publicly traded. Our data on

whether the firm is publicly traded are derived from merging the LBD with COMPUSTAT (unfortunately, we do not yet have this data for 2002).

4. Trends in Chain Types

Figure 1 presents the total number of firms and establishments (upper panel) and total real sales and employment (lower panel) for our sample of the retail trade sector from 1977 to 2002. The number of firms is large (about 1 million) and relatively constant over this time period. The number of establishments, not surprisingly, is much larger and the gap between the number of firms and establishments has risen steadily. By 2002 there are approximately 1.5 million retail trade establishments. The number of employees and real sales is also very large. In 2002, the retail trade sector accounted for about 25 million workers and over $3 trillion in gross real sales (2002 dollars). Employment and sales both grew rapidly over the period.

Figure 2 presents total employment (top panel) and total real sales (lower panel) for single-unit firms (SU) and multiple establishment firms (MU) for the retail trade sector from 1977 to 2002. Interestingly, in 1977 employment and sales for single-unit firms and multiunit firms were about the same but since then employment and sales for multiunit firms have increased rapidly relative to that of single-unit firms. By 2002, multiunit firms account for roughly two-thirds of sales and employment.

Figure 3 presents total employment (top panel) and total real sales (lower panel) by chain type. The figure shows dramatic growth in employment and sales for Mega retail firms (M) from 1977 to 2002. It is apparent that the growth in multiunit firms sales and employment in Figure 2 is dominated by the growth in sales and employment for Mega firms. There is some modest growth in employment and sales for the other multiunit firm chain types but this is

dwarfed by the changes in Mega firms. There is little change in the employment *shares* of Local (L), Regional (R), and National (N) chains but there was a dramatic decrease for Singles (S) (from 50% to 38%) and a concomitant increase for Mega firms (from 22% to 35%).

In interpreting these shares, it is important to emphasize that the decline in the Single firms share is not due to a falling number of firms or to falling employment (indeed employment for Single firms has been rising) but rather the dramatic growth of Mega firms. It is also worth noting that there is some evidence of acceleration in the growth, particularly for real sales, among the Mega firms during the second half of the period. According to Figure 3, the compound annual growth rate in real sales for Mega firms is 4.4 percent. For the period, 1977-87 the compound annual growth rate of real sales for Mega firms is 2.5 percent and for the period 1987-02 the compound annual growth rate is 5.7 percent. This acceleration is potentially relevant for helping us understand the factors underlying the growth of the Mega firms. Jarmin et al. (2004, 2005) point out that the share of activity in retail trade accounted for by large, national chains has been growing over the entire post-WWII period. However, it is of interest to note that there has been in an acceleration in this growth since the 1980s.

Table 1 presents summary statistics on firms and establishments by chain type. Recall from Figure 1 that the total number of firms in the retail sector in 2002 is about the same as in 1977. While the total number of firms has remained the same, the composition has changed significantly. Single firms dominate the number of firms over the entire sample period, but there has been substantial growth in the number of Mega firms. The number of Mega firms more than doubled over this period. There was also substantial growth in the number of Regional and National firms. We also see that the total number of establishments associated with Mega firms more than doubles over the period. There is substantial growth in the number of establishments associated with Regional and National firms. The number of establishments associated with

Single and Local firms has not changed much over the period.

Not surprisingly, the number of establishments per firm is much larger for Mega firms than for other firms (the average number of establishments per Mega firm is around 200 in 2002). The difference between the number of establishments per firm by Mega firms and National firms is about 180 log points in 2002 . Interestingly, the average number of establishments per firm for Mega firms has fallen slightly. This implies that the increase in the number of establishments for Mega firms is largely driven by an increase in the number of Mega firms rather than in the number of establishments per Mega firm. Note however that this inference is a bit misleading as we will see below as the composition of Mega firms themselves have been changing over time.

Table 1 shows that Mega firms are much larger than other firms in terms of average sales and employment per firm. Mega firms are more than 700 log points larger in employment and sales than Single firms. There is some modest growth in average employment size for all chain types and relatively flat average sales per firm. Returning to Figures 1-3, it is clear that the rapid increase in sales and employment in the retail trade sector is associated with an increase in the role of Mega firms and in particular the number of Mega firms.

Further information about the size distribution of employment across chain types is presented in Table 2. The top panel shows average employment size of the different types of firms. In Table 2 we see stark differences between the average size of Single firms and Mega firms. However, even these stark average size differences do not fully capture the drastic differences in the size distribution. The lower panel of Table 2 shows the average size of firms weighted by employment. This statistic provides a summary measure of the coworker mean which is the size of the average firm for the average worker (see Davis et al. (1996)). Computing these weighted statistics is interesting because of the skewness of the firms' size distribution.

The bottom panel shows that in 2002 the average employee in a Single firm had 66 co-workers, a significant increase since 1977. However Mega firm employees had far more co-workers on average: 184,369. Compare this to the simple average Mega firm size of 14,911. The difference between the coworker mean and the simple mean provides information about the skewness of the size distribution. An interesting feature of Table 2 is that the distribution of Mega firm sizes is very skewed in its own right. Put differently, while Mega *firms* are large on average, their size distribution is very skewed so that the average *worker* at a Mega firm works for a very large firm.

The main point of this introductory analysis is the increasingly dominant role of Mega firms in retail trade. In our subsequent analysis, we seek to explore the nature of the dramatic increase in the role of Mega firms. Before turning to that analysis, we examine the patterns of job creation and destruction and entry and exit across chain types. This analysis provides a richer picture of the restructuring in the retail trade sector over the last couple of decades.

5. Reallocation Between and Within Chain Types

The analysis in the prior section provides evidence of the restructuring between chain types over the last few decades in the retail trade sector. To look deeper into this restructuring, we calculated job creation and destruction as well as entry and exit rates so that we could examine the pace and nature of the restructuring within chain types. In terms of methodology, we follow the methods developed and described in Davis et al. (1996) and that we used for the retail trade analysis in Foster et al. (2006). In calculating and constructing these measures, we use both the establishment and the firm as the units of observation. For job creation by establishments, we measure the employment gains by all expanding and entering establishments

from one period to the next. Entry reflects the true births of establishments in the sense that there is a new establishment at a physical location in the year in question. For job destruction, we measure the employment losses by contracting and exiting establishments. Exit reflects the true death of establishments in the sense that the establishment at a given physical location ceases operations at that location. We follow Davis et al. (1996) and convert the flows to rates by dividing the flows by the average of employment in the current and prior period. In considering the patterns reported in this section, by construction all job flow measures are employment-weighted growth rates and we report the entry and exit rates on an employment-weighted basis as well. All of the job flow and entry and exit rates reported in this section are over a five-year horizon. As in the prior section, we assign establishments to chain types based upon the characteristics of the parent firm.[3]

At the firm level, job creation and destruction numbers reflect analogous concepts but firm entry and exit now reflect the entry of a new firm (which may be from an ownership change) or the exit of a firm (again which may be from an ownership change). In subsequent sections, we take advantage of information about acquisitions and divestitures to explore such changes more fully but for now it is important to recognize the concept of firm entry and exit used in this subsection.

Figure 4 shows the patterns of job creation and destruction where the unit of observation is the establishment and Figure 5 shows the analogous patterns where the unit of observation is the firm. Figure 4 shows a high pace of job creation for all chain types with the highest pace for single-unit establishments. Over a five-year horizon, job creation for establishments associated with Single firms is about 60 percent of employment . Interestingly, while establishments

[3] It is the characteristics of the parent firm in year t where job flows and entry and exit rates are computed from year t-k to t.

associated with Single firms tend to have the highest job flows, even establishments associated with Mega firms have a high pace of establishment level job creation of around 50 percent of employment. In the lower panel of Figure 4, the patterns of job destruction are reported. For establishments of Single firms, the pace of job destruction is also very high – around 50 percent of employment. However, the gap between job destruction for Single firms and Mega firms is much larger than the gap for job creation. Job destruction for establishments from Mega firms over a five year horizon is substantially lower around 30 percent of employment. Thus, the difference in the net growth of Single firms and Mega firms is primarily associated with much lower job destruction of establishments from Mega firms compared to Single firms.

Turning to the firm as the unit of observation, the patterns of job creation and destruction across chain types yield more differences. By construction, creation and destruction patterns for Single firms is similar to that of Single establishments.[4] Job creation for Single firms at the firm level averages about 60 percent and job destruction at the firm level averages about 50 percent. However, for chain firms and especially Mega firms, both job creation and especially job destruction are much lower at the firm level. For Mega firms, job creation at the firm level averages just under 40 percent of employment while job destruction averages 15 percent of employment.

Comparing Figure 4 and Figure 5 reveals that job creation for Mega *firms* is about 11 percent below the job creation by *establishments* for Mega firms and job destruction for Mega *firms* is about 15 percent below the job destruction by *establishments* for Mega firms. These

[4] The job creation and destruction and entry and exit statistics for single-units are not identical at the establishment and the firm level given the difference in the nature of identifiers used at the establishment and firm level of analysis. When we compute establishment-level flows, we use an establishment-level identifier that is invariant to ownership change – and as noted in the text entry is true entry and exit is true exit. When we compute firm-level statistics we use a firm-level identifier that changes when the legal entity owning the firm changes. In Table 4, the statistics at the firm and establishment-level are very similar but by construction flows are slightly higher when using the firm-level identifier reflecting ownership changes.

differences imply that Mega firms exhibit considerable within firm reallocation. That is, they are shrinking some establishments while expanding others within the Mega firms.

Table 3 provides summary statistics about patterns of entry and exit across chain types. Two closely related but distinctly different statistics are reported. First, at both the establishment and firm level, we report the shares of creation and destruction accounted for by entry and exit respectively. The denominator here is total job creation and destruction by chain type so a high share tells us about the importance of the entry and exit margin for creation and destruction. Second, we report employment-weighted entry and exit rates so the denominator here is the employment for the chain type in question. In terms of the share of job creation from entering establishments, Mega firms are not that much different from Single firms. For all types of firms, about 80 percent of establishment-level job creation over a five-year horizon is from establishment entry. It is striking that this pattern holds for both Single firms and Mega firms so that job creation at the establishment level is dominated by establishment entry even for Mega firms. Turning to entry rates at the establishment level, the five-year entry rate of establishments is higher for Single firms than for establishments owned by Mega firms but towards the end of the sample there is almost no difference.

On the destruction side, for single-unit establishments, exits dominate job destruction accounting for 80 percent of job destruction over a five year horizon. Put simply, if a single-unit contracts it often contracts via exit. The implied five-year exit rate for single-units (employment weighted) is just under 40 percent. In contrast, the share of job destruction from establishment exit by the establishments of Mega firms is substantially lower but is growing over the 1977 to 2002 period. In the 1992 to 2002 period, about 70 percent of the job destruction at the establishment level for Mega firms is via establishment exit. Still, the implied five-year exit rate of establishments from Mega firms is between 17 and 21 percent which is far lower than that for

single-units. These findings together suggest that establishments of Mega firms are less likely to contract but if they do contract they often do so via exit. Thus, in terms of net entry rates of establishments we observe that the much higher net entry rate of establishments for Mega firms is due to much lower exit rates.

Now turning to the share of job creation and destruction by entering and exiting firms, the pattern for Single firms is about the same as at the establishment level and is high around 80 percent. In contrast, for Mega firms only a very small share of the job creation at the firm level is due to firm entry. The low share for Mega firms combined with the lower firm level creation rate in Figure 5 implies a low entry rate for Mega firms, it varies between 4 and 8 percent over the sample over a five-year horizon. This pattern is not surprising since even over a five-year horizon few firms are born as Mega firms. Those that are born as Mega firms are in part new firms created from mergers and acquisitions (something we look at in the next section). Still, we can see that with the low entry rate at the firm level that this is not the typical path for becoming a Mega firm.

In terms of job destruction we see very different patterns across chain types as well. Mega firms have a much lower share of job destruction from firm exit than Single firms. In addition, as we saw in Figure 5 the job destruction rate for Mega firms is low. The five-year exit rate at the firm level is around 7 or 8 percent of employment.

In considering these patterns of job creation and destruction as well as entry and exit, it is useful to note that the average size of establishments varies across chain types including the size of the typical entrant across chain types. For example, in 2002 the average single unit incumbent establishment had 11 employees, the average single unit entrant had 9 employees, the average incumbent establishment belonging to a Mega firm had 35 employees and the average entering establishment belonging to a Mega firm had 27 employees. Thus, part of the story of

the relatively high share of job creation from entrants for Mega firms is the size of the typical entrant. Still, the entry rates for Mega firms are relatively high as well.

Putting the pieces together, we find that Mega firms are much more stable than their Single firm counterparts in terms of firm and establishment level job destruction. Once created, an establishment from a Mega firm as well as the overall Mega firm is much less likely to contract and exit than a Single firm. Thus, in an accounting sense, the rise of the Mega firms is not because of the lack of job creation and entry by Single firms (this has remained consistently high) but rather the almost as high job creation and establishment entry for Mega firms and the very low job destruction and establishment and firm level exit of Mega firms. [5]

In terms of overall establishment and firm volatility, the increasing role of Mega firms is clearly a factor contributing to the decline in firm and establishment volatility documented by Davis et. al (forthcoming). One measure of overall establishment or firm volatility is job reallocation (the sum of creation and destruction at the establishment and firm level respectively). The substantially lower job destruction rates for establishments from Mega firms, the associated lower job destruction rates at the firm level for Mega firms, and the shift in employment shares towards Mega firms implies establishment and firm volatility has been declining in retail trade. While Davis et al. (forthcoming) suggest a variety of hypotheses for the economy-wide decline in firm and establishment volatility, the restructuring of the retail trade sector is clearly an important factor and it is of interest to explore the role of large, national chains for the declining volatility in other sectors.

[5] Or the flip side is how is it that large Mega firms have such high rates of job creation from establishment level entry. A common finding on job flows is that small establishments and firms have high job creation and destruction rates. This pattern holds in retail trade for Single-units. However, for Megas they have a high rate of establishment entry and very low rate of establishment exit.

6. Mega Firms

The previous section has illuminated the increasing dominance of Mega firms in retail trade, we now turn to examining the path and the factors that led to this phenomenon. We explore the dynamics of Mega firms by focusing on the Mega firms in 2002 and examining how they evolved over the 25 years of our sample. To begin this analysis, we examine the dynamics of these firms by the year of entry of the firm.

Table 4 shows the transition dynamics of the 2002 Mega firms by birth year of firm and the tenure of the firm as a Mega firm. For example, a firm born in 1987 that became a Mega in 1992 is part of the birth year cohort of 1987 and tenure group of 10 (since by 2002 it had been a Mega for 10 years). The top panel shows the transition matrix in terms of employment, the bottom in real sales. The first column of each panel shows the share of 2002 activity accounted for by each birth cohort. The next six columns show the contribution from each tenure cohort (where the sum of columns 2 through 6 is equal by construction to the total share in column 1). There is left censoring of the birth cohorts and right censoring of the tenure. Given the censoring, some of the elements in columns 2 through 6 are omitted by construction. For example, there are no firms with tenure equal to 25 for birth cohort 1997. Additionally, some cells are suppressed for disclosure reasons (denoted by D).

Most of the activity in 2002 of the Mega firms is from firms that existed in 1977. Nonetheless, about 30 percent of activity is from later birth cohorts. Interestingly, even though the firms in existence in 1977 predominate, only about half of those firms were Mega firms in 1977. Across all birth cohorts, about 15 percent of sales and employment of Mega firms in 2002 are associated with Mega firms with tenure less than 5 years. Almost half of the activity of Mega firms in 2002 is associated with firms with tenure as Mega firms less than 15 years.

Taking the birth cohorts and the tenure as Mega firms together, a significant fraction of the Mega activity in 2002 is due to new Mega firms, either true new entrants or firms that have become Mega in the last 15 years.

Since a firm is a legal entity that owns physical establishments, it is possible to define the first year of the firm using either the first appearance of the legal entity or of the oldest physical establishment that the firm owns. We examine this distinction in the Data Appendix and find that the same basic patterns reported in Table 4 hold when we define age of the firm using the age of the oldest establishment. In what follows, we restrict our analysis to using the firm age defined by the age of the legal entity. We believe for current purposes this definition of firm age is of interest since understanding the evolution to Mega status may be connected to merger and acquisition activity. Indeed, in the analysis below we look at the role of acquisitions for the expansion patterns of Mega firms. However, the analysis in the Data Appendix suggests this is not a major factor in the results.

Cohort Analysis of 2002 Mega Firms

Given that the 2002 Mega firms represent a rich blend of older and newer firms, we explore a cohort analysis of the 2002 Mega firms. For this analysis, we focus on the cohort analysis by birth year of the firm and restrict our analysis to the 2002 Mega firms. By doing this we intentionally introduce sample selection since we want to illuminate the evolution of the 2002 firms (i.e., how we got here). In conducting this analysis, we are not identifying when the Mega 2002 firm became a Mega but rather when it first started operation as any type of firm. As should already be clear from Table 4, many new cohorts of firms that are ultimately Mega firms by 2002 are not Mega firms initially and it takes time for these firms to become Mega firms.

When interpreting this cohort analysis several cautions should be kept in mind. First, as

noted earlier, there are issues of left censoring for the 1977 birth cohort and right censoring for all cohorts. Second, when we define firm birth as the entry of a firm (legal entity) as identified by a new firm identifier, this "firm birth" may in fact reflect change in ownership structure (for example through merger and acquisition activity) as well as de novo firms. The analysis in the prior section shows that the firm entry rate for Mega firms is very low so this does not appear to be a major factor. Still, it is of interest to explore the difference between firm and establishment age in this context, which is something we plan to explore further in future drafts.

Figure 6 shows the evolution of average per firm employment (in logs) for the birth cohorts for the 2002 Mega firms.[6] The plot shows that conditional on survival all the birth cohorts exhibit dramatic growth. The 1977 cohort has an average per firm employment growth of over 200 log points, the 1982 cohort over a shorter horizon has an average per firm employment growth of 350 log points and so on. Appropriate caution is required in interpreting the performance of recent cohorts given the right censoring in this and subsequent figures (e.g., the 2002 cohort that enters appears to come in at a high average per firm employment but presumably this is a better indicator of the average size of Mega firms that immediately become Mega firms rather than the average size of firms that eventually become Mega firms after the point of entry). Figure 7 repeats the same type of analysis for average real sales per firm (in logs) and the mimics the patterns in Figure 6. [7]

[6] All of the cohort plots (e.g., Figure 6-10) are based on a simple regression specifications interacting year effects with birth cohorts. As such, the regressions recover the means of the variable of interest for each birth cohort by year. The estimated effects are precisely estimated given the sample size – for example in Figure 6 all of the standard errors are 0.2 or below. In future drafts, we will find a parsimonious way of reporting the standard errors associated with these estimates of means by group.

[7] It is tempting to make inferences about labor productivity from comparing Figures 6 and 7. The caution in making such inference is that sales per worker differ substantially across industries and the analysis thus far does not hold industry composition fixed. Thus, spurious movements in sales per worker can occur in the aggregate as the industry composition changes. In future drafts of the paper, we will explore the role of labor productivity which will require a careful tracking of establishment and firm level industry which is a bit of a challenge over this sample given the switch from SIC to NAICS in 1997 and 2002.

The cohort analysis helps provide an interpretation of the prior finding (in Table 1) that showed an overall relatively modest change in average log employment and average log real sales for Mega firms. Figures 6 and 7 show that within a surviving cohort of Mega firms, there is substantial growth especially taking into account the pre-history of firms that ultimately become Mega firms (that is, following firms from birth not from the time they achieved the Mega classification). However, each new cohort comes in smaller than the incumbents and this suggests that a composition effect is important to understanding the overall changes in average size for all firms from one year to the next. That is, while there may be growth within birth cohorts, the entry of a new cohort with smaller average size at entry will tend to reduce the average size of all Mega firms in any given year.[8] A related point is that the growth of the Mega firms while Mega firms neglects the pre-history growth as firms transit to becoming Mega firms. While these patterns hold for all of the cohorts, the 1982 cohort appears to have followed a slightly different path.

Figure 8 repeats the same type of analysis for the average number of establishments per firm (in logs). There is rapid growth within a cohort in the average number of establishments. For example the 1997 birth cohort exhibits more than a 200 log point growth in the average number of establishments.

Figures 9 and 10 turn to other attributes of Mega firms that have not been emphasized in earlier analysis. The average number of states per firm is depicted by birth cohort in Figure 9. Recall that by construction that a Mega firm operates in 15 or more states. However, this cohort analysis is based upon those firms that are Mega firms in 2002 and looks backwards to various birth cohorts. For the 1977 firm birth cohort, the average number of states in 1977 is around 12

[8] Figures 6 and 7 do not provide enough information to quantify the extent of this composition effect. The analysis in this section looks backward at the 2002 Mega firms by birth cohort. As is clear from Table 4, many of the Mega

suggesting that most of this cohort had not achieved Mega status in 1977. However, the 1977 firms average number of states is 16 in 1982, so that on average the 1977 birth cohort had achieved Mega status by 1982. The 1982 cohort has a slower track to Mega status. Upon birth the average number of states for the 1982 cohort is less than 6 and this cohort does not achieve Mega status on average until 1997. The 1987 cohort achieved Mega status, in contrast, on average in five years. These two cohorts show that the path to becoming a Mega firm is likely quite different across firms. Future work will explore the factors that underlie such differences.

The patterns in Figure 9 shed light on whether the growth patterns within cohorts in Figures 6 and 7 reflect growth before or after a firm is classified as a Mega. Consider the 1977 cohort, which according to Figure 9 on average becomes classified as Megas in 1982, Figures 6 and 7 show rapid growth of this cohort both before and after 1982.[9]

Figure 10 takes another perspective on the evolution of the cohorts that become Mega firms by 2002. Figure 10 shows the fraction of the firms in each birth cohort that are publicly traded (this analysis is truncated in 1997 since the identification of publicly traded status is somewhat noisy within the current retail trade database underlying this analysis). For the 1977 birth cohort (which recall is left censored), more than 40 percent of the firms are publicly traded and this share grows to 60 percent by 1997. For the 1982 birth cohort, only about 20 percent of these ultimately Mega firms are publicly traded at birth but by 1997 more than 50 percent are. The rapidly growing 1987 birth cohort (as observed in Figures 6-9) starts with about 30 percent publicly traded and the share grows rapidly so that by 1997 almost 60 percent are publicly traded. To put these statistics into perspective, Davis et al. (forthcoming) show that less than 1 percent of the firms in the U.S. private, non-agricultural sector are publicly traded so these

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firms are not Mega firms upon entry but take a number of years after entry to attain Mega status.

Mega firms are, not surprisingly, much more likely to be publicly traded than the typical firm. Still, it is interesting that there is such a close correspondence in the growth patterns exhibited in Figures 6-9 and the share of publicly traded firms by birth cohort. While causality cannot be inferred it is clear that getting funding from going public is often part of the process of being and becoming one of the dominant Mega retail trade firms in the U.S. economy.

The Role of Acquisitions

Our cohort analysis has shown that each cohort of Mega firms has grown rapidly over the last several decades, we now explore the role of acquisitions of existing establishments versus entry of new establishments in this growth. To gain some perspective on the relevance of acquisitions for Mega firms, Table 5 provides summary statistics on the patterns of acquisitions and divestitures. It shows the cumulative totals of acquisitions and divestitures of establishments over the 1977-2002 period for the 2002 Mega firms. We find that 28 percent of 2002 Mega firms did not have any acquisitions over the 25 year period and 31 percent acquired only one establishment. 60 percent did not have any divestitures over the 25 year period and 16 percent had only one. Given these patterns of acquisition, we now turn to the growth patterns of these two different groups.

Here we repeat the cohort analysis but break a given cohort into two groups: those firms that added at least one establishment via an acquisition over the 25 year horizon and those that did not. Figures 11, 12 and 13 show key patterns for the cohorts classified in this manner. The top panel of Figure 11 shows the log number of establishments per firm by cohort of the 2002 Mega firms for firms that did not acquire an existing establishment while the lower panel shows the equivalent pattern for those firms with acquisitions. While both groups show rapid growth,

[9] A simple regression analysis at the firm level could shed more direct light on this question and we plan this in future drafts.

there are distinct differences in the patterns. Consider the 1977 cohort, for example. The 2002 Mega firms from the 1977 cohort that only increased the number of establishments via entry of establishments (true births) started with a substantially smaller number of establishments (around 7 in 1977) but exhibited phenomenal growth of almost 300 log points. For the same cohort that had at least one acquisition they started substantially larger (about 50 establishments) but also exhibited rapid growth of around 200 log points. This same qualitative pattern is repeated for other cohorts. Thus, the group that used only establishment entry grew faster than the group that used acquisitions, although the latter group is clearly larger especially for the oldest cohort. We should note in interpreting this pattern that even the group that had acquisitions likely grew largely via establishment entry. Recall that Table 3 shows that almost 80 percent of job creation at the establishment level for Mega firms is via establishment entry.[10]

Figure 12 shows the equivalent pattern now focusing on log employment per firm. The same qualitative pattern as Figure 11 emerges. The firms that did not have an acquisition started smaller and grew more rapidly. Figure 13 looks at these patterns by the number of states the firm is operating in. Again, the same basic pattern emerges. The firms without acquisitions start with a substantially smaller number of states but grow more rapidly. By 2002, those with acquisitions are in slightly more states but those without acquisitions have largely caught up in terms of the number of states.

Taken together, Table 5 and Figures 11-13 show an important role for firms with acquisitions.[11] About 72 percent of 2002 Mega firms had at least one acquisition over the time period so they are the dominant group. Moreover, Figures 11-13 show they are also larger than

[10] In future drafts, we will explore empirical decompositions of the growth patterns of the different cohorts identifying the contribution of acquisitions, establishment entry and the like.
[11] We have also explored the patterns for real sales per firm by cohort and obtain results similar to those reported in Figure 11.

the group without acquisitions. However, the group that expanded only via establishment entry grew very rapidly over the last 25 years, while they constitute only 28 percent of Mega firms by 2002 they are about as large on many dimensions as the counterparts with acquisitions.

6. Conclusions and Future Research

The growth of chain firms in the U.S. retail trade sector that has been documented in the literature is mostly a result of the growth of Mega firms. Mega retail trade firms (firms with establishments in at least 15 states) increasingly dominate the U.S. retail trade sector. Even though the difference in the number of firms between Singles and Mega firms is enormous (there are almost 1 million Single firms and only about 500 Mega firms), Mega firms account for about the same amount of employment and sales as their much smaller Single firms counterparts in 2002. The growth of smaller chains (operating in less than 15 states) has been far more modest. Moreover, the growth of the sales and employment by Mega firms is driven largely by an increase in the number of Mega firms, not in an increase in the average size of Mega firms. However, this latter pattern is somewhat misleading as within birth cohorts of Mega firms there is substantial growth but each new cohort of Mega firms is smaller than the incumbent Mega firms.

Mega firms are very large. The average size of a Mega firm is almost 15,000 workers with about 200 establishments which compares to an average of around 10 workers for Single firms. Moreover, even amongst the Mega firms, the size distribution is very skewed. The average worker who works for a Mega firm on average works for a firm with about 185,000 workers. This contrasts with the average worker for a Single firm who works for a firm of around 66 workers.

The Mega firms in 2002 are predominately firms that have existed more than 25 years. About 30 percent of 2002 Mega firms are less than 25 years old. However, for even the firms that have been in existence for at least 25 years, a substantial fraction of these firms became Mega firms in the last 15 years. Some birth cohorts of eventual Mega firms achieved Mega status much faster than other birth cohorts. For example, the 1982 birth cohort of firms achieved Mega status on average in 15 years, while the 1987 birth cohort of firms achieved Mega status on average in 5 years.

In terms of volatility, Mega firms are much more stable than their Single firm counterparts. Job creation and establishment entry (on an employment-weighted basis) for Single firms is very high and has remained high for the last few decades. Job creation and establishment entry for Mega firms is somewhat lower than for Single firms but the largest gap between Single firms and Mega firms is in the pace of job destruction and establishment and firm exit. Once created, an establishment for a Mega firm is much more stable in the sense that it is much less likely to contract and exit. Thus, in an accounting sense, the decline of the Single firm role in retail trade is driven by the high exit rates of Single firms relative to the establishments of Mega firms. Put differently, in terms of responding to changing economic conditions (changing costs, changing demand across locations from changing locations of populations and incomes, changing tastes, and changing technology), Single firms have been entering the retail trade sector at a consistently higher rate (on an employment-weighted basis) than the establishments of Mega firms. However, the job destruction and exit rate of Single firms is much higher than for Mega firms and enough so that net aggregate growth rate of Mega firms far exceeds that for Single firms. Thus, one question we should be asking is what are the factors that yield much higher exit rates for Single firms. In considering this question, it is worth noting that we do not observe any discernable trend in job destruction and exit rates for

Single firms (if anything there is a modest downward trend) so this phenomenon is not new but it is still a core part of the ongoing change in market structure.

The large differences in the job destruction and exit patterns for Single versus Mega firms are part of the underlying story of the decline in overall firm volatility documented by Davis et al. (forthcoming). The greater stability and the rising share of Mega firms have implied substantially lower firm and establishment volatility for the overall retail trade sector.

A cohort analysis of the 2002 Mega firms shows that within a birth cohort there has been dramatic growth of the average size of firms. For example, the 1982 birth cohort of the 2002 Mega firms exhibited more than a 350 log point increase in average size between 1982 and 2002. The dramatic growth of the average size of firms (measured in terms of sales or employment) within cohorts is reconciled with the modest overall increase in average size of Mega firms via composition effects. That is, while any given cohort has exhibited dramatic growth, each new cohort comes in small at entry and this composition effect reduces the average.

Not surprisingly, the share of Mega firms that are publicly traded is much larger than that for the typical firm. Still, a large fraction of Mega firms are not publicly traded. For example, even for the 1977 birth cohort of the 2002 Mega firms, about 40 percent of these firms are not publicly traded. There is a close correspondence between the within cohort growth of average sales per firm (or average employment per firm) and the growth in the cohorts share of publicly traded firms. For example, the rapidly growing 1987 birth cohort of 2002 Mega firms rapidly increased its share of firms that are public in a coincident pattern with growth. While causality is not clear, it is clear that part of the path to becoming a Mega firm is to go public.

Our findings show that the primary means of expansion for Mega firms is via establishment entry. However, in exploring the role of acquisitions we find that about 70

percent of all Mega firms have at least one acquisition over the 1977-2002 period. The Mega firms with acquisitions are larger on average but have grown more slowly than the Mega firms that expanded solely via establishment entry. Still, in 2002 the Mega firms that used acquisitions over the last 25 years remain substantially larger than their Mega firms that did not have an acquisition.

The analysis in this preliminary version of the paper is largely descriptive. This paper as well as the closely related recent literature makes a prima facie case that understanding the structural changes towards Mega retail trade firms is important. Much work remains to be done even in a descriptive manner. Differences across industries in paths to becoming Mega have not been explored.[12] Moreover, in the spirit of Holmes (2006), there must be economic factors that help account for the different patterns observed across birth cohorts, industries and firm types. Holmes suggests, for example, that there are potential tradeoffs between economies of density and expanding to the highest quality retail sites. Another factor that may be playing a role is the IT revolution which, arguably, has helped Mega firms like Wal-Mart develop sophisticated inventory management and distribution networks that are critical for being able to take advantage of the economies of scale of Mega firms. We certainly do not address this latter question in any direct way but our evidence should be helpful in evaluating such questions. For example, Jarmin et al. (2004, 2005) note that the rising share of large, national firms predates the IT revolution. However, our evidence suggests that there has been an acceleration in the growth of Mega firms since the mid 1980s. On the other hand, our evidence is that Single firms have been consistently entering at a high rate over this entire period but their exit rate has remained high as well. Any IT based explanation would need to take into account the job

destruction and exit patterns we have detected. In short, the current analysis is a long way off from providing enough guidance to identify the economic factors that have led to the dominant role of Mega firms, but it is our hope that this type of detailed description of the evolution of retail firms can aid in such identification.

[12] The industry level analysis will permit us to explore productivity dynamics in this context. Foster et al. (2006) have already explored productivity dynamics across chain types but their analysis ended with the 1997 CRT and also did not explore all of the different dimensions of Mega firm dynamics.

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Data Appendix

Summary Statistics for the Retail Trade Sector

Table A1: Summary Statistics for the Retail Trade Industry, 1977-2002

Year	Establishments	Employment	Sales
SIC Basis			
1977	1,303,621	13,040,082	699,634,863
1982	1,330,316	14,467,813	1,039,028,742
1987	1,503,593	17,779,942	1,493,308,759
1992	1,526,215	18,407,453	1,894,880,209
1997	1,561,195	21,165,862	2,545,881,473
NAICS Basis			
1997	1,118,447	13,991,103	2,460,886,012
2002	1,114,637	14,647,675	3,056,421,997

Source: Census of Retail Trade, various years. The 1997 SIC data are from the Census website.

Industry Coding Issues

The 1977 and 1982 CRT have some establishments with industry codes that fall outside of retail trade. When an industry code falls outside of retail trade in our sample, we look first in the LBD for the same year and then in the next CRT. These matches greatly improve the industry codes for 1977 and 1982. Nevertheless, there are still about 200,000 in employees in 1977 and 100,000 in 1982 that are coded outside of retail trade.

There are special issues concerning a SIC-based version of retail trade in 2002. The SIC definition of retail trade is more broad than the NAICS definition of retail trade (notably it includes Eating and Drinking Places). However, part of the NAICS version of retail trade is also not under the SIC definition. These NAICS-only industries are ones that had been wholesalers selling as retailers and repair shops. Ideally we would like to remove these establishments from our sample but this is not possible. While we can identify all continuers from 1997 that should be part of SIC-based CRT this only covers continuers. We still have extra establishments in our version of the 2002 SIC-based CRT due to unclassifiable births.

Comparing Establishment and Firm Age

Since a firm is a legal entity that owns physical establishments, it is possible to define the first year of the firm using either the first appearance of the legal entity or of the oldest physical establishment that the firm owns. We examine this distinction in the cross tabulation shown in Table A2. Table A2 shows firm first years for the 2002 Mega firms defined by the year the firm identifier first appears in the LBD (rows) and by the year the oldest establishment that the firm owns first appears (columns). We find that many Mega firms own establishments older than the firm itself. For example, 37 of the Mega firms whose firm identifier first appeared in 1982 (second row) had oldest establishments that first appeared in 1977 (first column). Given the size and geographic scope of these firms, perhaps this is not too surprising. What is a bit more surprising is that some of first years dated by the "oldest" establishments are

younger than the parent firm. For example, ten of the Mega firms whose firm identifier first appeared in 1977 (first row) had oldest establishments that first appeared in 1982 (second column). To understand how this can happen, recall that all of the Table 4 results are for the 2002 Mega firms. It may be that a 2002 Mega firm that started up in 1977 has by 2002 divested itself or closed down all of the establishments that date back to 1977, so the firm is older than the age of its oldest establishment.

Defining firm first year by the age of the oldest establishment shifts the firm age distribution of the 2002 Mega firms to the right. That is, the 2002 Mega firms have higher average ages when one defines age through oldest establishments rather than the firm identifier. To see how this may impact some of our earlier results, we turn to Table A3 which reproduces Table 4 using the oldest establishment as the identifier of firm births. It is still the case that most of the activity in 2002 of the Mega firms is from firms that existed in 1977 but few of them were Mega firms in 1977. Thus, in a broad sense our earlier findings are confirmed.

Table A2: Comparing First Year of Firm and of Oldest Establishment at the Firm (Number of Firms)

First Year	First Year of Oldest Establishment at the Firm					
of Firm	1977	1982	1987	1992	1997	2002
1977	205	10	D	D	D	D
1982	37	13	D	D	D	D
1987	45	D	13	D	D	D
1992	41	10	D	16	D	D
1997	34	6	9	7	7	D
2002	37	D	8	9	D	9

Note: Cells that cannot be disclosed are denoted by "D."

Table A3: Transition Matrix by Age of Oldest Establishment in the Firm

	Birth	Tenure over Census Years					
Cohort	Share	0	5	10	15	20	25
			Employment				
1977	93.4	14.1	11.2	9.6	4.8	17.7	36.1
1982	3.3	0.3	2.3	0.7	D	D	
1987	1.8	0.7	1.1	D	D		
1992	0.9	0.4	0.5	D			
1997	0.4	0.4	D				
2002	0.2	0.2					
			Real Sales				
1977	93.3	13.8	8.4	9.0	3.7	22.3	36.0
1982	4.0	0.3	3.5	0.3	D	D	
1987	1.4	0.8	0.6	D	D		
1992	1.0	0.6	0.4	D			
1997	0.2	0.2	D				
2002	0.2	0.2					

Note: Cells that cannot be disclosed are denoted by "D."

Table 1: Summary Statistics on Chain Types

	Single	Local	Regional	National	Mega
Log Number of Firms					
1977	13.75	10.80	8.55	6.21	5.55
2002	13.75	10.79	8.81	6.57	6.34
Log Number of Establishments					
1977	13.75	11.85	10.88	10.58	11.58
2002	13.75	11.94	11.28	10.77	12.51
Log Average Number of Establishments Per Firm					
1977	0.00	0.77	1.73	3.75	5.41
2002	0.00	0.81	1.80	3.50	5.29
Log Average Employees Per Firm					
1977	1.33	2.84	3.95	6.12	7.92
2002	1.60	3.29	4.41	6.28	8.07
Log Average Real Sales Per Firm					
1977	5.95	7.65	8.76	10.99	12.82
2002	5.98	7.84	9.02	10.97	12.79

Table 2: Average Size of Firms Measured By Employment

Year	Single	Local	Regional	National	Mega
Unweighted					
1977	7	38	191	1621	11249
1982	8	39	190	1427	11385
1987	9	47	216	2075	12758
1992	8	49	264	2050	11548
1997	9	56	301	2143	12367
2002	10	65	332	1834	14911
Weighted by Employment					
1977	26	606	2653	12355	92204
1982	29	757	2145	11699	80613
1987	36	1235	2689	16310	95787
1992	32	964	6949	19552	108022
1997	38	514	10939	28279	159896
2002	66	567	12999	16193	184369

Table 3: Summary Statistics on Entry and Exit Across Chain Types

	Single	Local	Regional	National	Mega
Average Share of Establishment-level Job Creation by Establishment Entry					
1977-1987	78.1	76.2	77.9	76.2	76.5
1992-2002	77.7	74.4	81.9	83.2	78.7
Average Share of Establishment-level Job Destruction by Establishment Exit					
1977-1987	80.4	71.8	67.5	69.2	59.7
1992-2002	79.1	71.9	71.5	70.2	69.7
Average Share of Firm-level Job Creation by Firm Entry					
1977-1987	80.0	64.6	37.4	22.9	9.3
1992-2002	80.1	63.3	44.2	35.7	20.0
Average Share of Firm-level Job Destruction by Firm Exit					
1977-1987	82.9	63.8	67.4	48.7	54.0
1992-2002	82.6	61.4	67.0	64.1	46.5
Average Five-Year Establishment-level Entry Rate					
1977-1987	46.6	44.8	44.2	40.1	35.5
1992-2002	44.9	35.2	42.7	41.1	41.7
Average Five-Year Establishment-level Exit Rate					
1977-1987	38.9	28.2	21.3	21.4	17.2
1992-2002	36.0	30.5	26.3	33.3	21.0
Average Five-Year Firm-level Entry Rate					
1977-1987	48.7	37.6	19.4	10.4	3.7
1992-2002	48.3	27.4	19.5	13.9	8.2
Average Five Year Firm-level Exit Rate					
1977-1987	43.1	23.2	19.7	14.3	8.0
1992-2002	40.0	25.6	20.3	23.2	7.1

Note: Job flow and entry and exit statistics are for five-year horizons. Reported statistics in table are averages over two five-year periods at the beginning (1977-82 and 1982-87 averaged) and end (1992-97 and 1997-2002 averaged) of the sample period.

Table 4: Transition Matrix by Firm Age of the 2002 Mega Firms

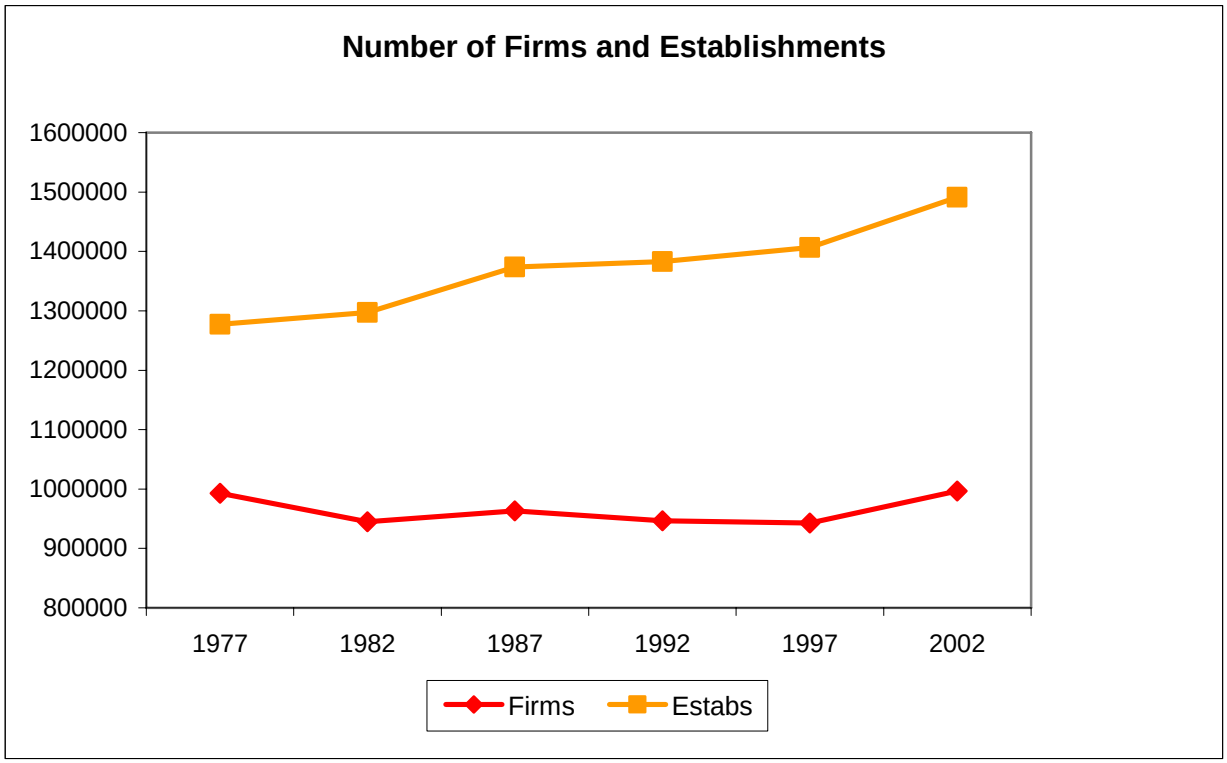
Cohort	Birth Share	Tenure over Census Years 0	5	10	15	20	25
Employment							
1977	68.9	5.5	3.9	3.5	3.0	17.1	35.9
1982	6.6	1.4	1.4	D	D	D	
1987	7.7	0.6	3.2	2.2	1.8		
1992	4.2	0.9	1.7	1.6			
1997	6.1	1.2	4.9				
2002	6.4	6.4					
Real Sales							
1977	72.6	5.8	4.4	2.3	2.5	21.7	35.9
1982	7.5	1.2	1.0	D	D	D	
1987	7.5	0.9	4.2	1.2	1.3		
1992	3.2	1.2	0.8	1.2			
1997	5.2	2.7	2.5				
2002	3.9	3.9					

Note: Cells that cannot be disclosed are denoted by "D."

Table 5: Cumulative Patterns of Acquisition and Divestiture of Establishments for 2002 Mega Firms over 1977-2002

Cumulative Number of:	Acquire	Divest	Either
0	158	392	150
1	177	90	161
2	111	29	103
3	43	20	51
4+	81	39	105
In Percents			
0	28	69	26
1	31	16	28
2	19	5	18
3	8	4	9
4+	14	7	18

Figure 1: Summary Statistics for Retail Trade Sample, 1977-2002



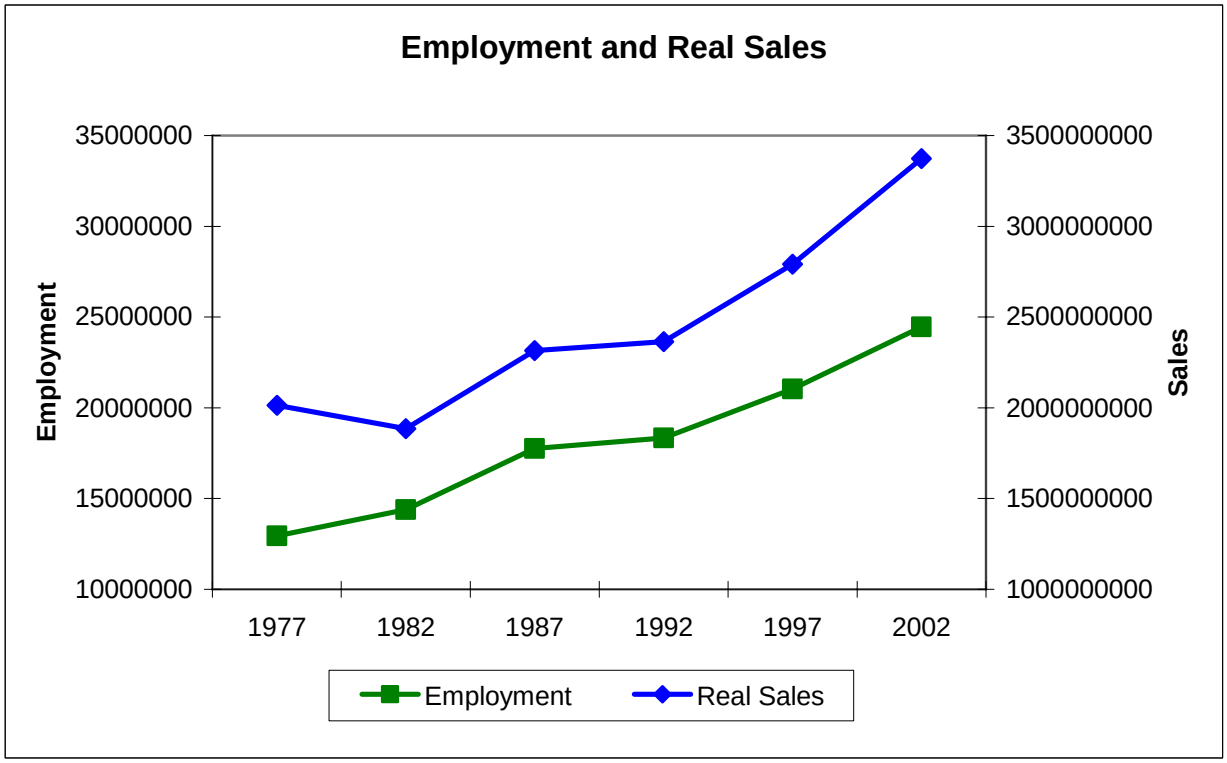
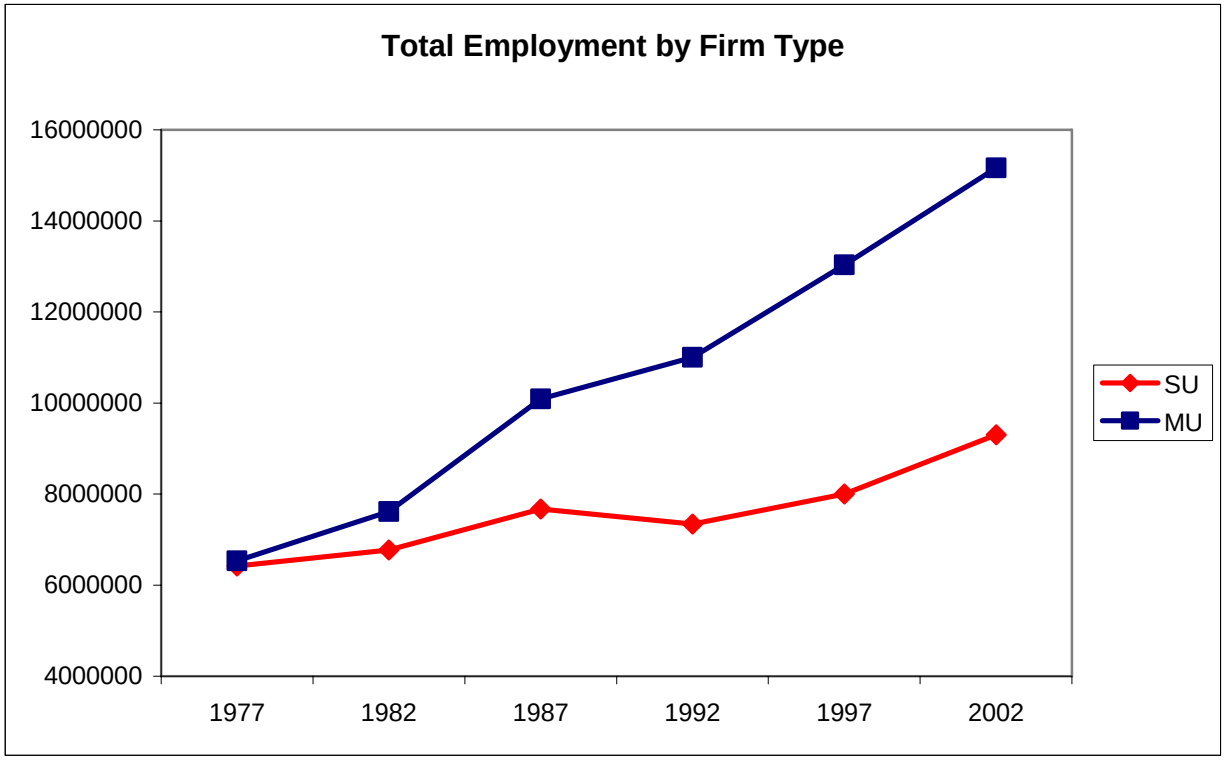


Figure 2: Total Employment and Real Sales by Firm Type



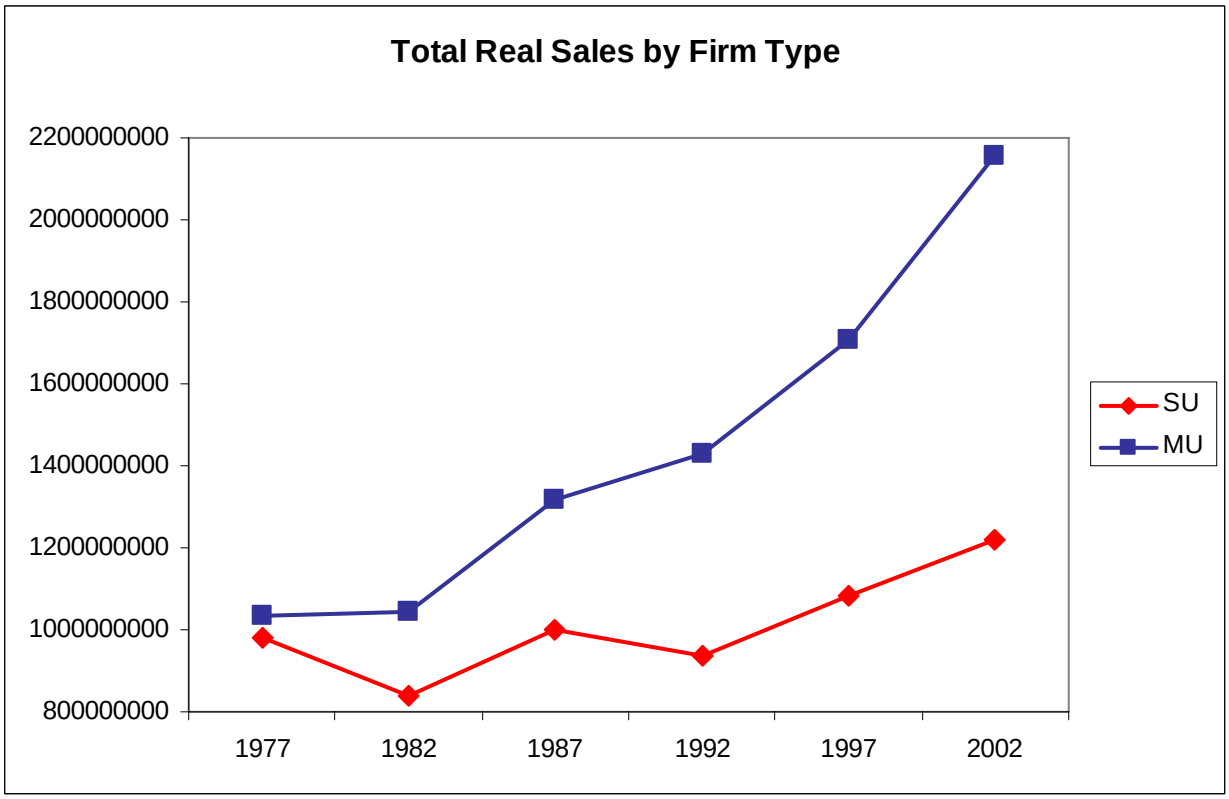
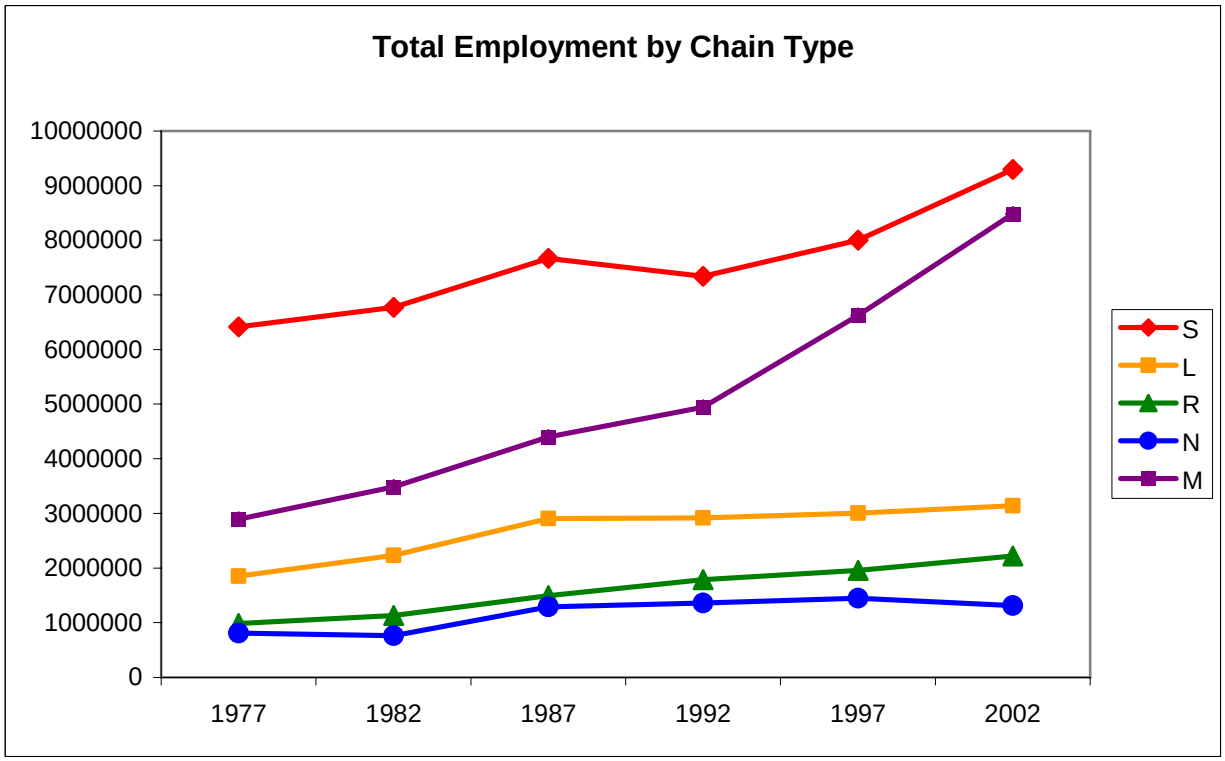


Figure 3: Total Employment and Real Sales by Chain Type



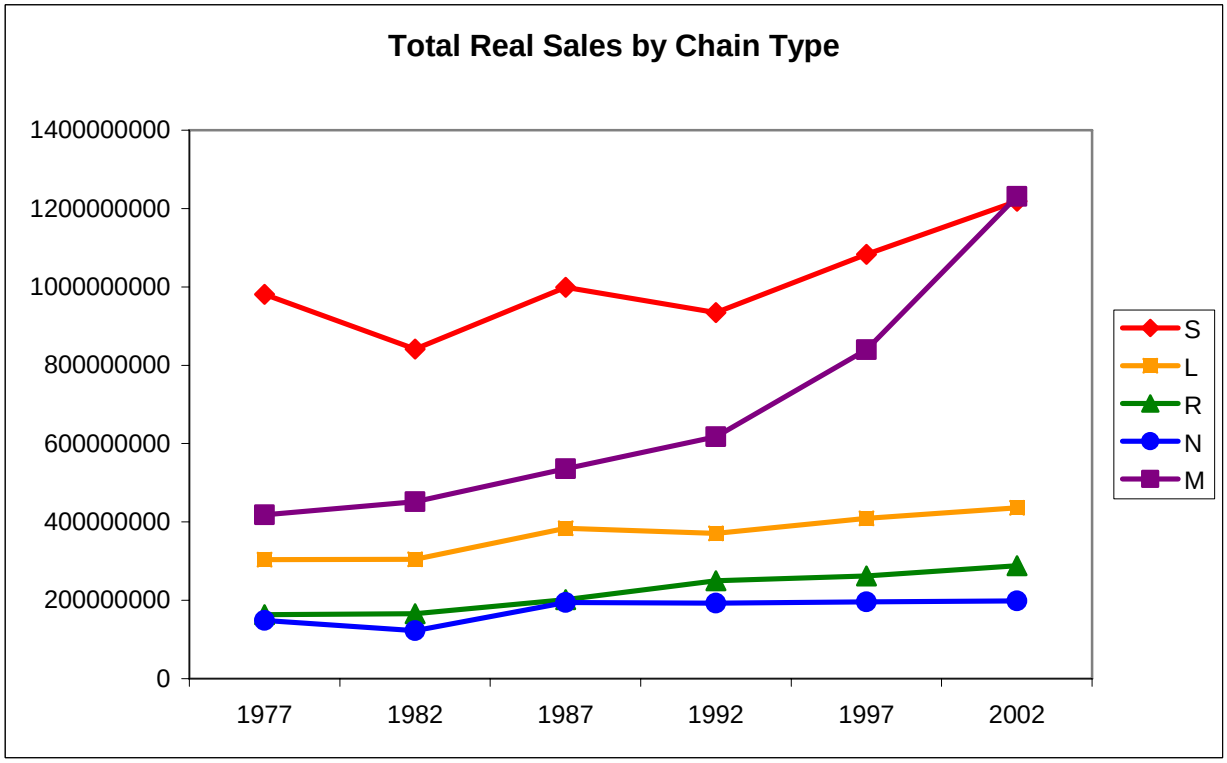


Figure 4: Job Creation and Destruction by Establishments and Chain Type

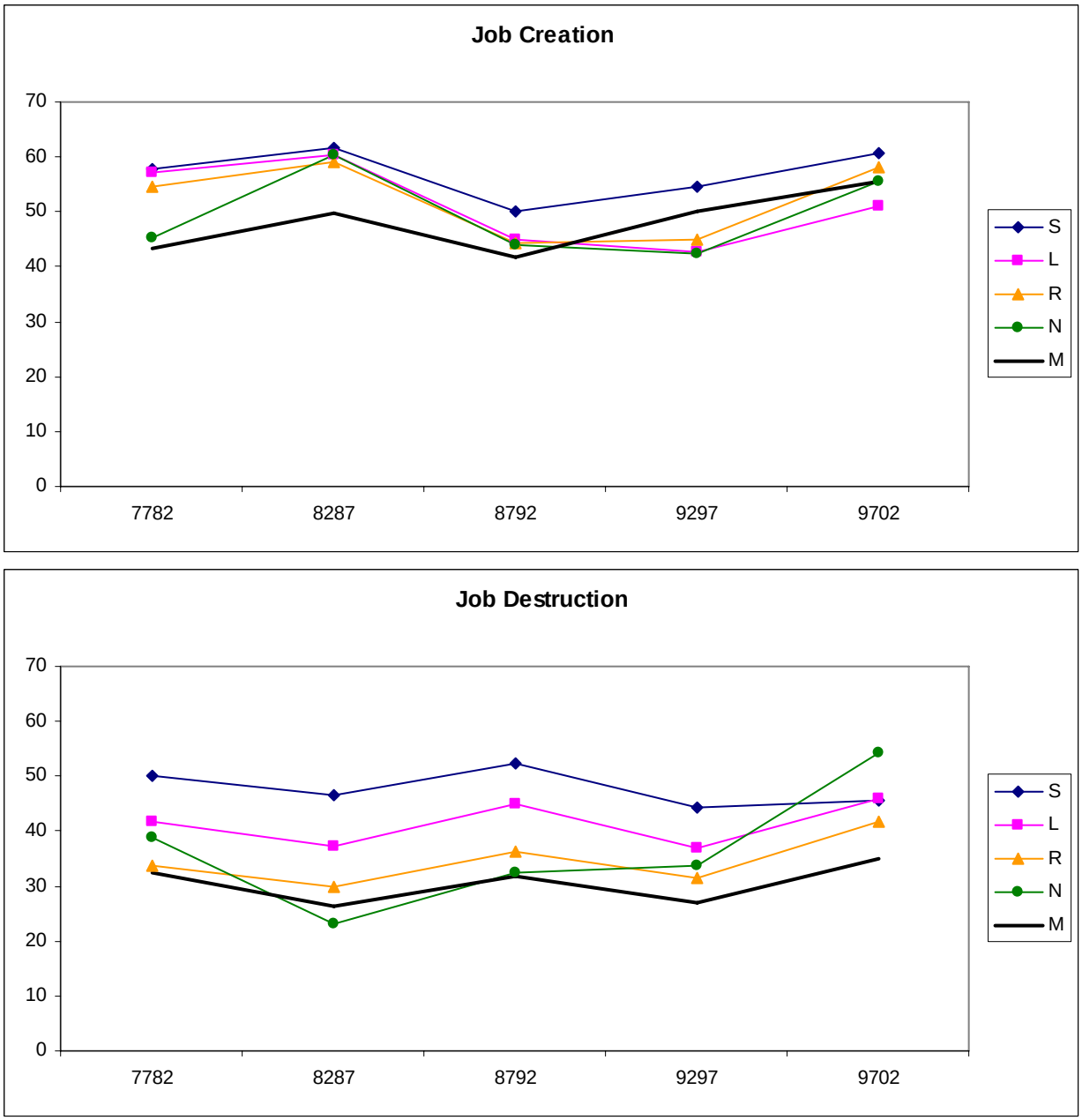
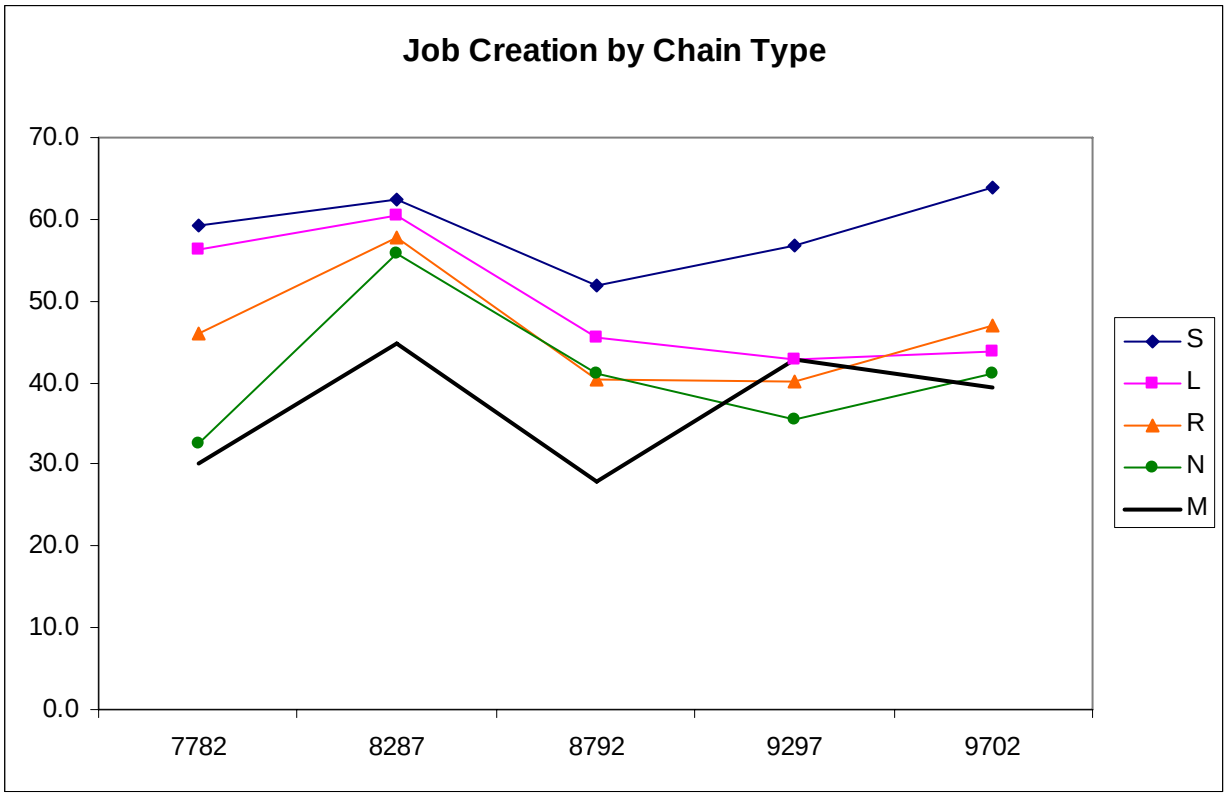


Figure 5: Job Creation and Destruction by Firms and Chain Type



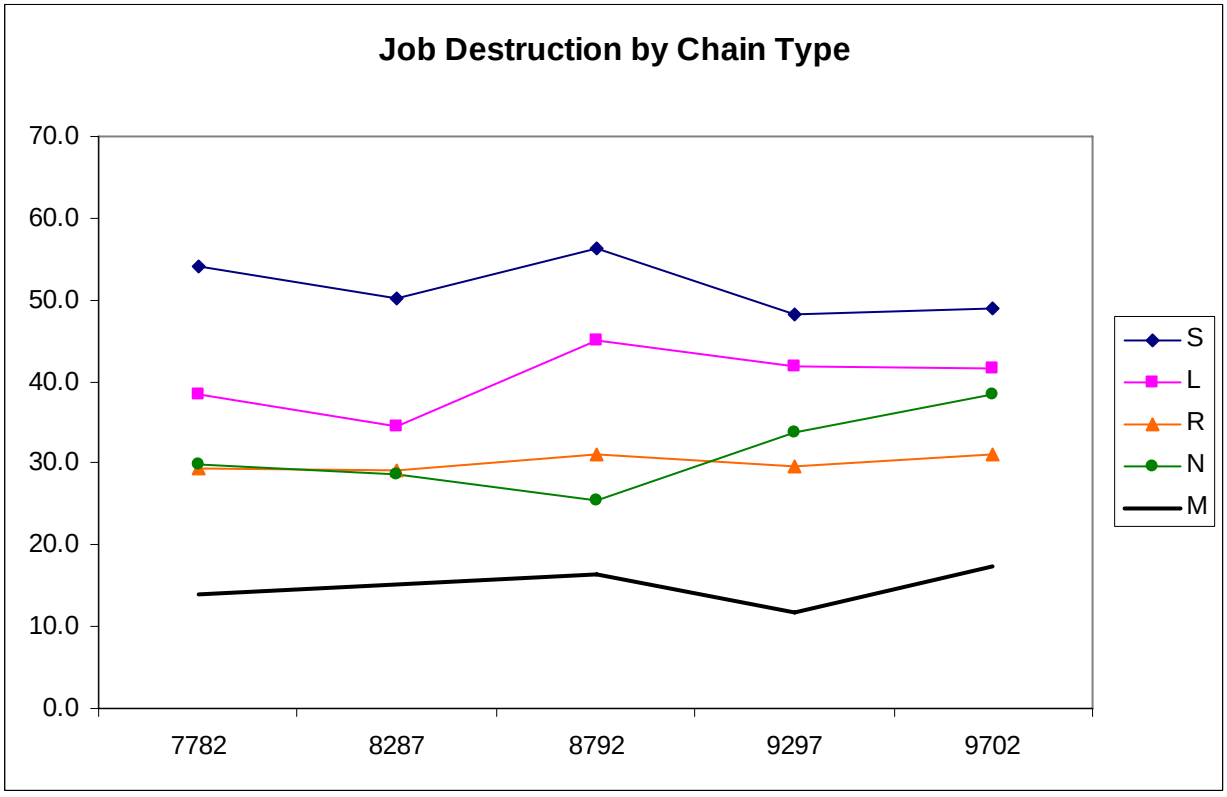


Figure 6: Cohort Analysis of Average Log Employment Per Firm for 2002 Mega Firms

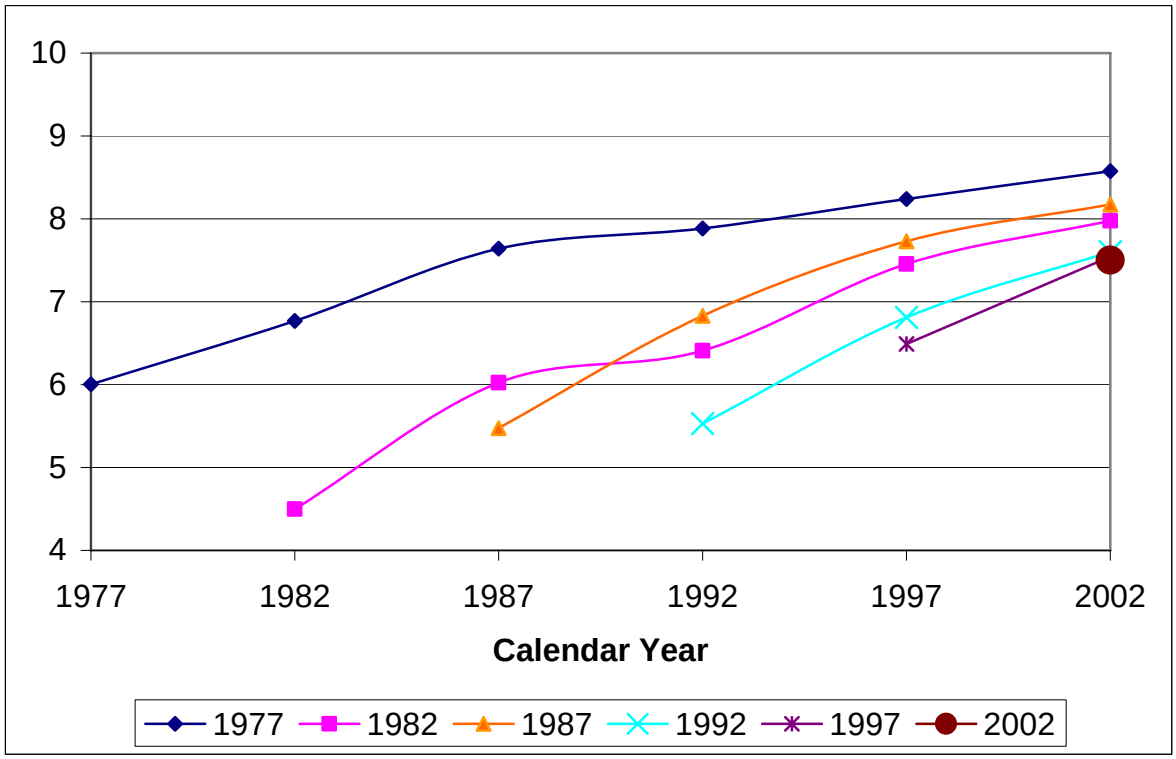


Figure 7: Cohort Analysis of Average Log Sales Per Firm for 2002 Mega Firms

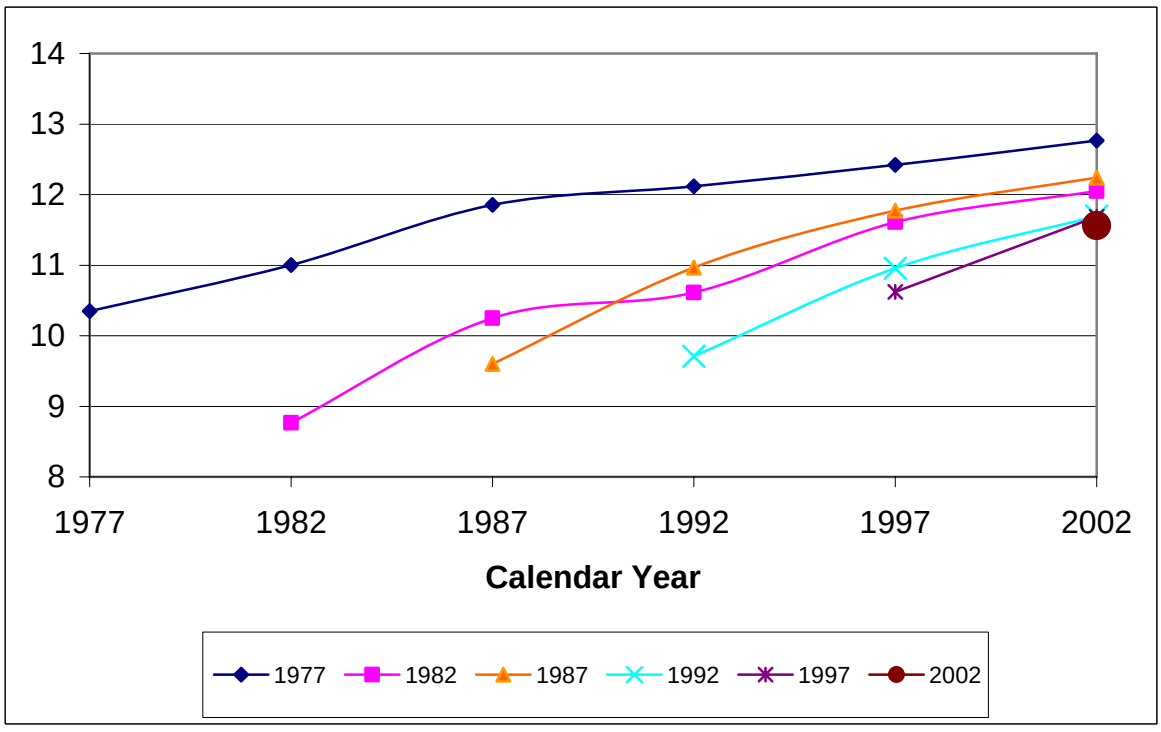


Figure 8: Cohort Analysis of Average Log Number of Establishments Per Firm for 2002 Mega Firms

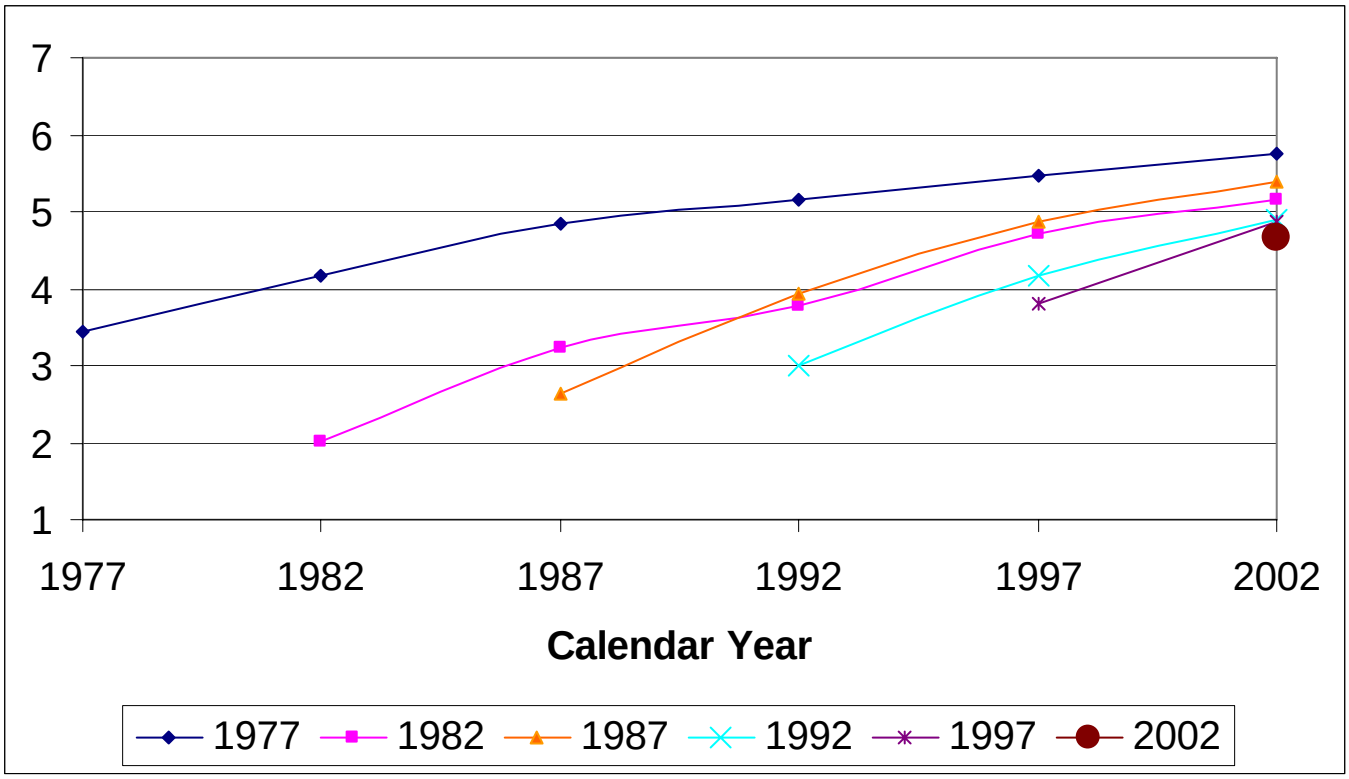


Figure 9: Cohort Analysis of Average Number of States Per Firm for 2002 Mega Firms

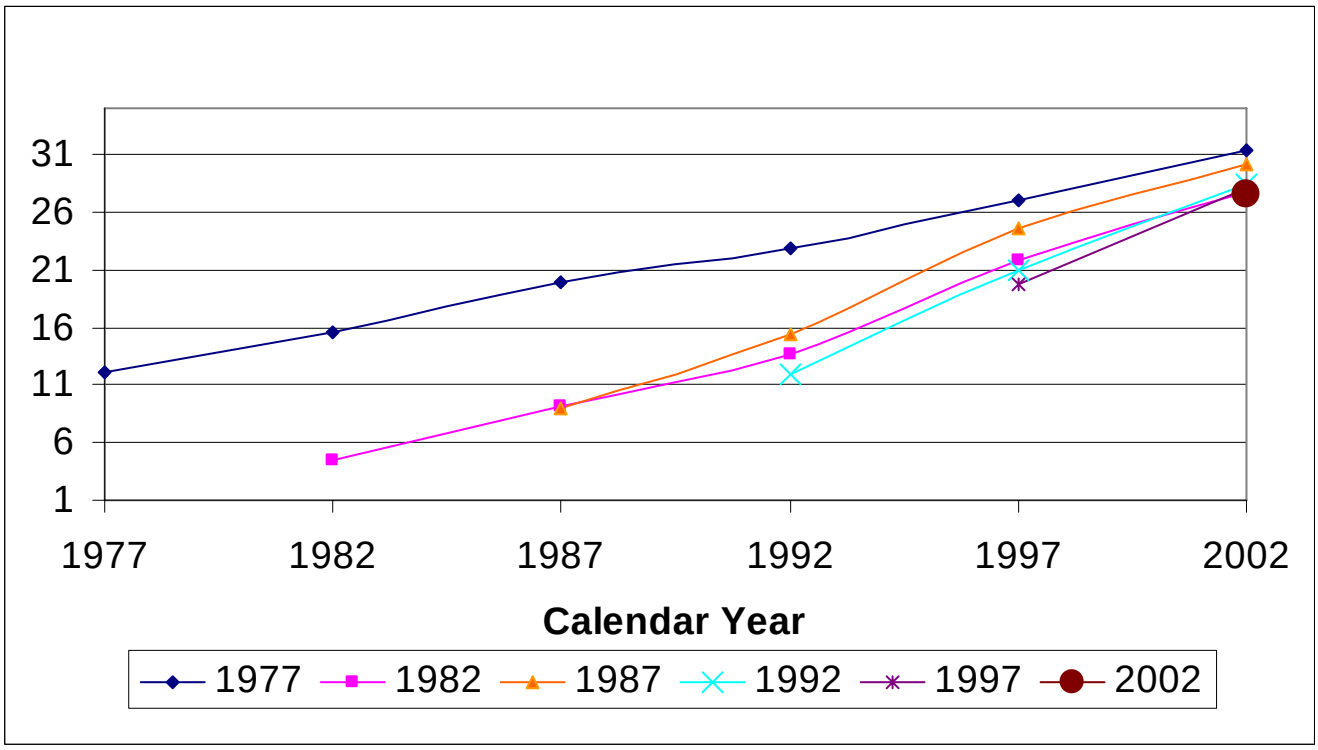


Figure 10: Cohort Analysis of Average Share of Publicly Traded Firms for 2002 Mega Firms

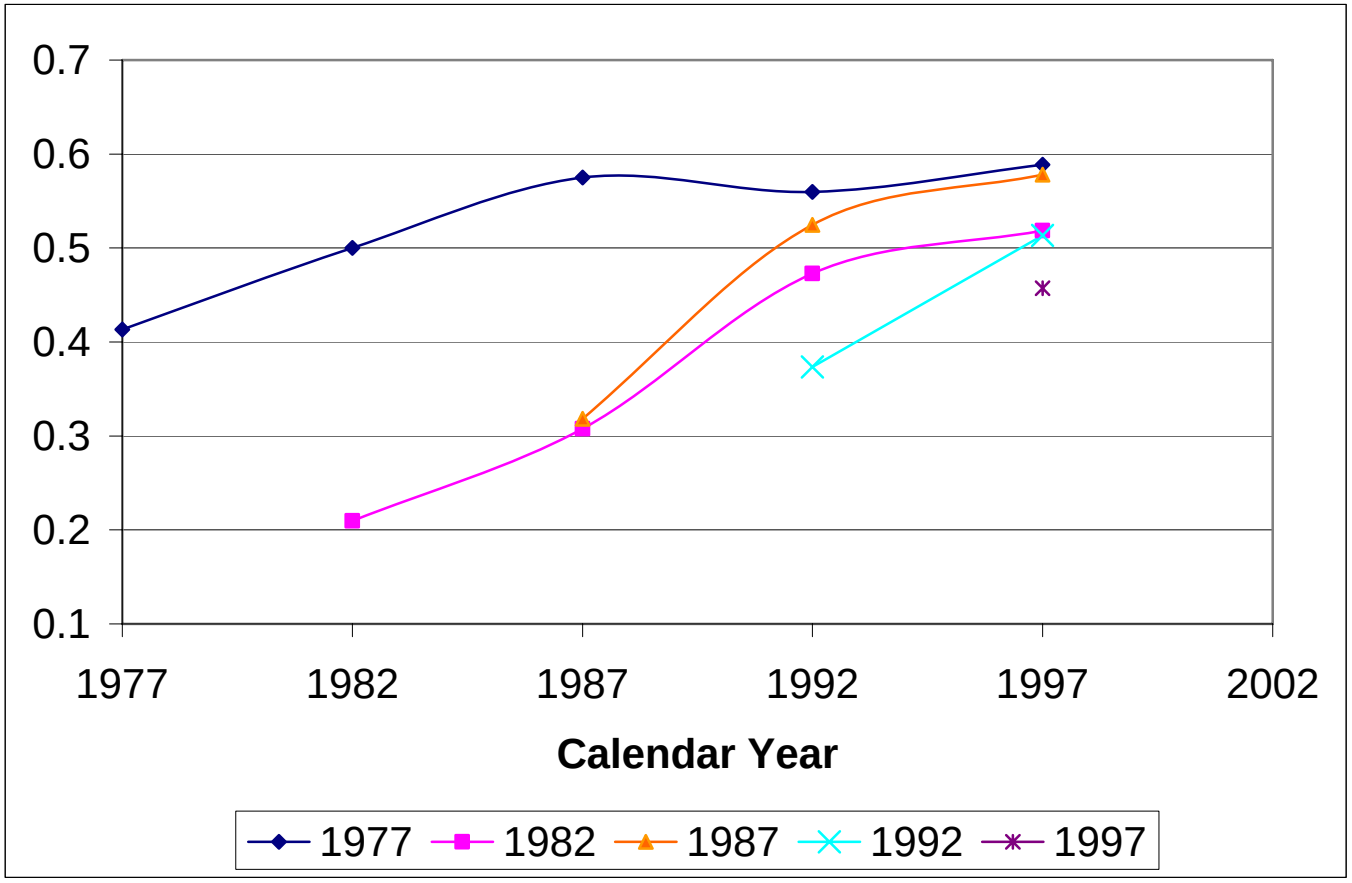
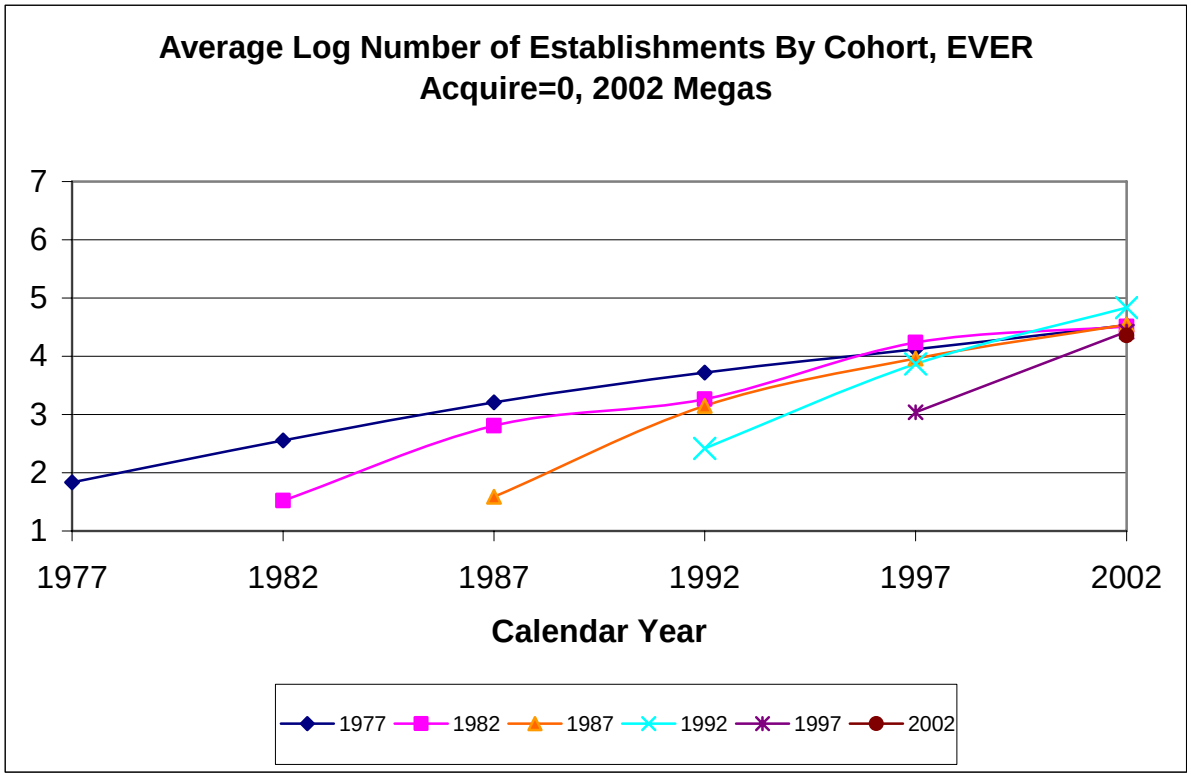


Figure 11: The Role of Acquisitions for the log Number of Establishments of Mega Firms by Cohort



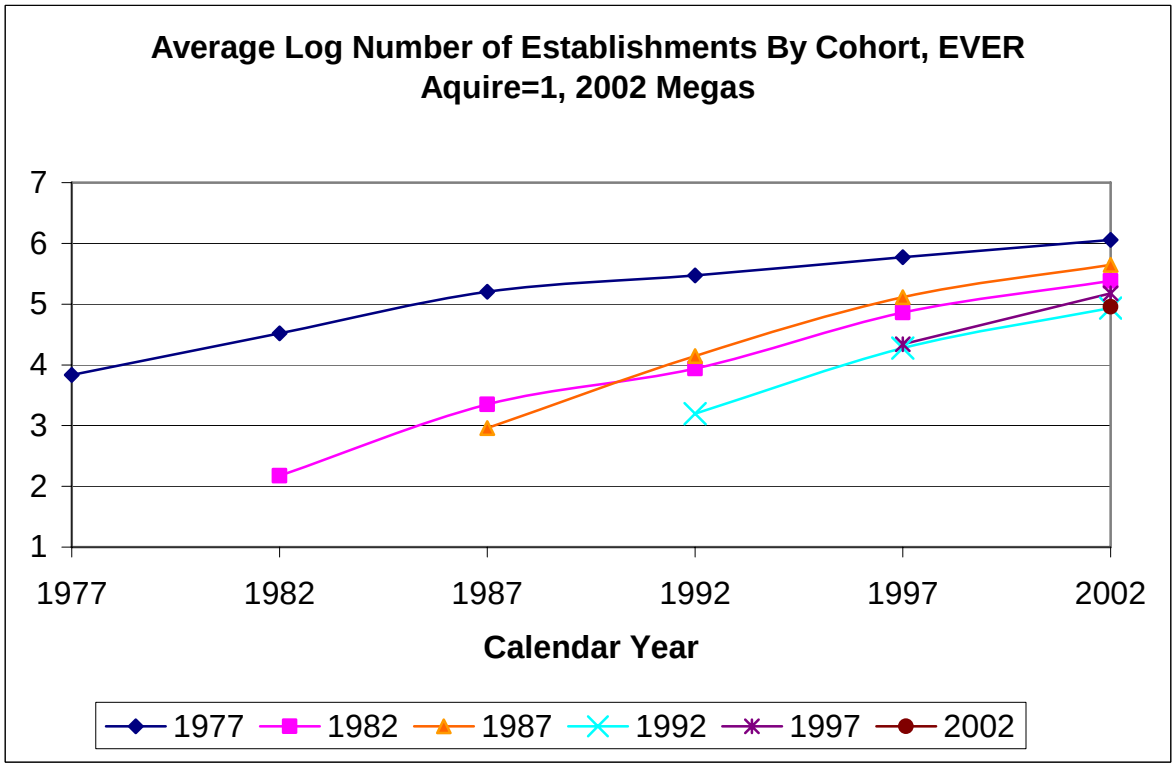
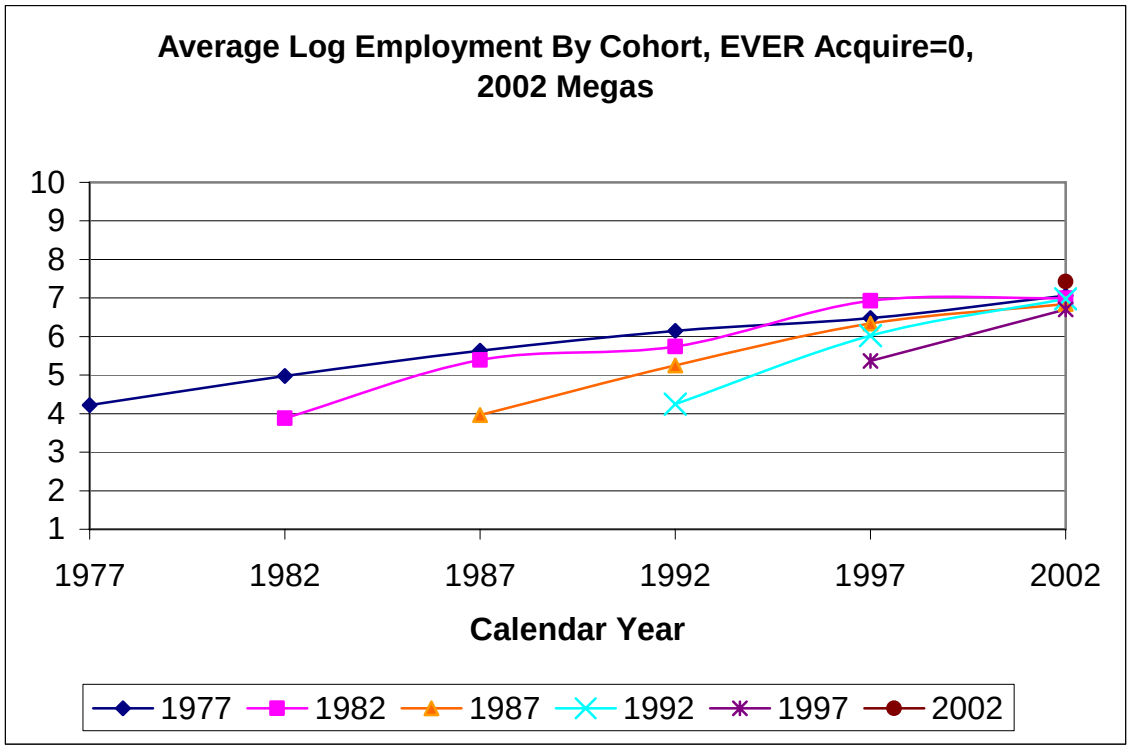


Figure 12: The Role of Acquisitions for the log Employment of Mega Firms by Cohort



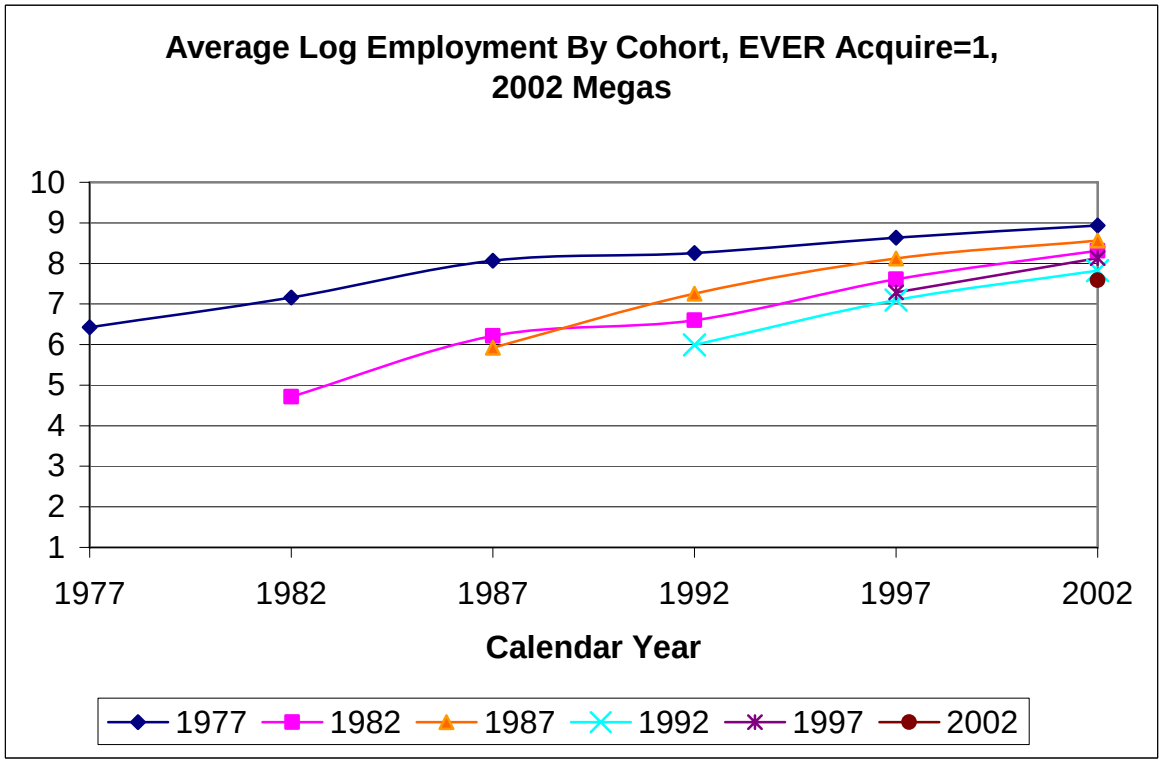


Figure 13: The Role of Acquisitions for the Number of States of Mega Firms by Cohort