

Chaining and Changes in Local Concentration

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Extended Abstract

The US economy has experienced a deep structural transformation in recent decades. In particular, much has been made of two phenomena: a rise in national industrial concentration and dramatic changes in the prevalence of multi-establishment firms (chains). The economics literature has largely discussed these phenomena separately. First, there has been recent interest in documenting the evolution of industry concentration in the US economy. Many authors have shown that concentration has risen nationally over the last 30 years (e.g. De Loecker, Eeckhout and Unger (2019)). This evidence led to concern that market power and markups were on the rise as a result. Another strand of literature has looked at the evolution of chaining, defined as the diffusion of multi-establishment firms, in the US economy. Several papers have investigated the nature of entry and exit of chain and non-chain establishments, including Dunne, Roberts and Samuelson (1988), Jarmin, Klimek and Miranda (2004), Jarmin, Klimek and Miranda (2009), and Foster et al. (2016). The latter study in particular describes the evolution of chaining in the retail sector, arguing that national firms have acquired an increasingly dominant role from 1977-2007.

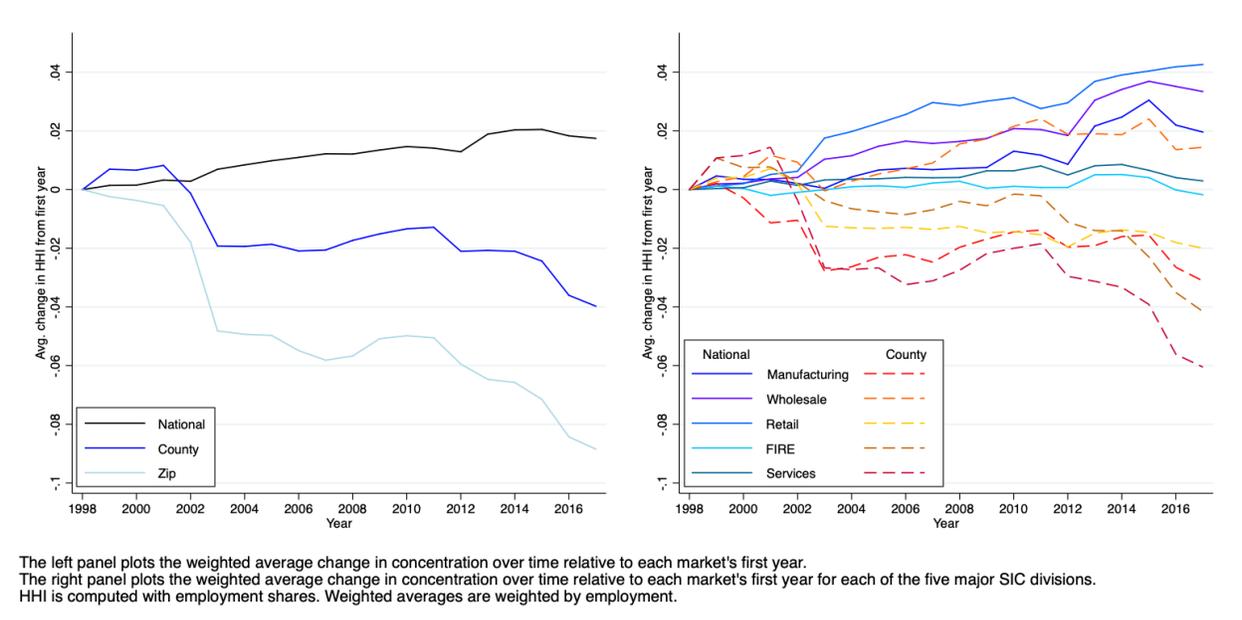
The literature has recently begun to posit a relationship between these two phenomena. In particular Rossi-Hansberg, Sarte and Trachter (2018) provide a nuanced interpretation to the concentration story. For many goods, particularly those in the service and retail sectors of the economy, relevant geographic markets are local. Thus, market power is likely to be driven by changes in local market structure. They document a divergence between the trend in national and local concentration. In particular, they show that on average, local concentration has fallen across a broad set of sectors of the US economy. Rossi-Hansberg, Sarte and Trachter (2018) posit a role for the largest firm in a sector to lower local concentration by expanding into new markets.

In this paper we provide descriptive evidence to understand the extent to which changes in chaining drive the changes in concentration. We do so in several steps. First, we introduce the Your Time Series (YTS) dataset, a novel establishment-level database for the period 1998-2017. This

database combines a degree of accuracy comparable to that of US Census data, in the dimensions relevant to our study, without the constraints of confidentiality.

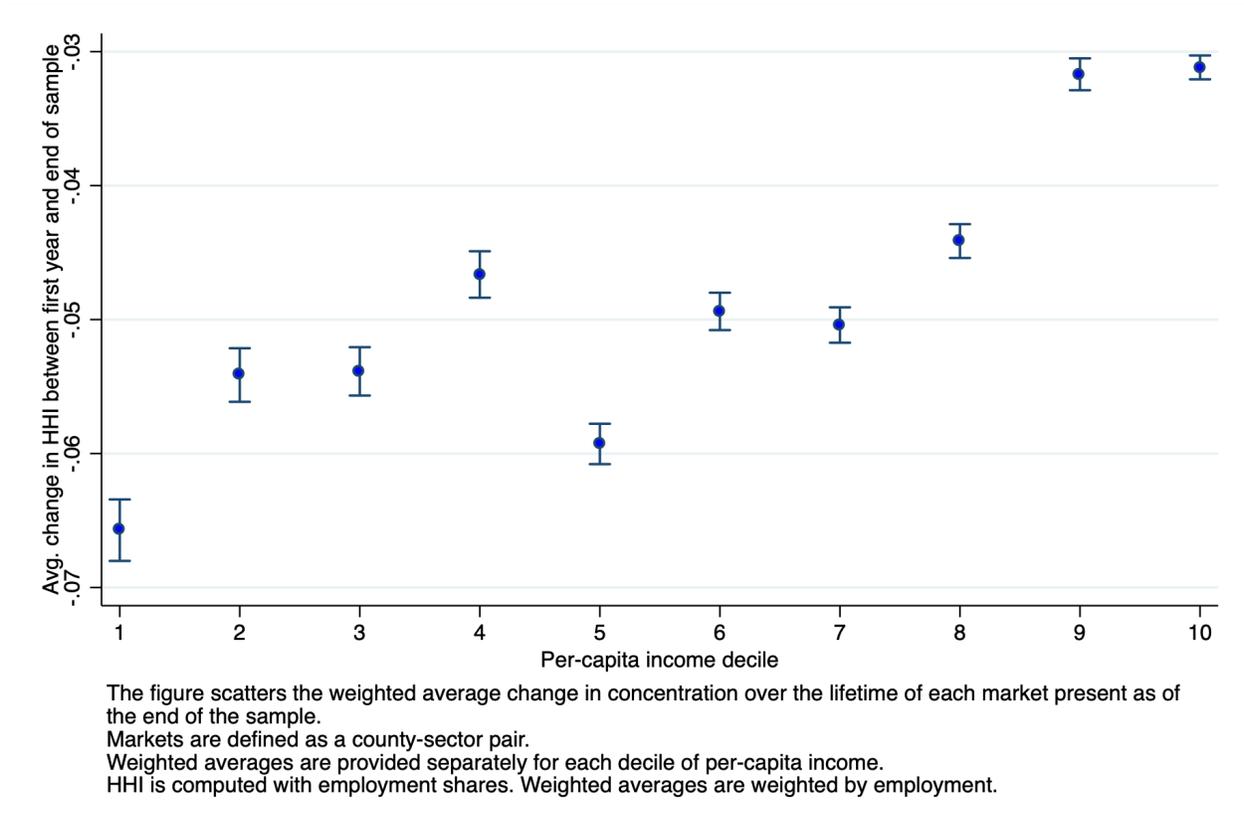
Second, we replicate in our data the findings on the diverging trends in concentration by Rossi-Hansberg, Sarte and Trachter (2018). Like those authors, we find that national and local trends in concentration diverged from 1998-2017. These results are illustrated in the left panel of Figure 1. Specifically average national concentration measured by employment HHI increases by 2 percentage points (p.p.) over our sample period, while average concentration across sector-county pairs falls by 4 p.p. This finding is robust to many definitions of industry and local market. In the right panel of Figure 1, we replicate with our data the variation in these trends across industries observed in Rossi-Hansberg, Sarte and Trachter (2018).

FIGURE 1: Average change in national and local concentration



We then present new findings on substantial heterogeneity in concentration trends across geographies. In particular, we find that changes in local concentration are positively related to income so that the decline in average local concentration is driven by low-income counties. In addition, income is the only geographic characteristic that explains observed changes in concentration. In figure 2, we compute the average total change in concentration over the sample period separately for each income decile and scatter these averages against income. We see that the decline in concentration becomes less pronounced as one moves upward through the income distribution; concentration falls nearly 4 p.p. more in the first decile of the income distribution than in the tenth.

FIGURE 2: Average change in local concentration by county income decile



We then move to connecting these facts about concentration trends to chaining. There are several reasons to focus on chaining’s role in explaining concentration trends. Chaining is closely related to the rises in national concentration mentioned above. Table 1 shows the results of two OLS regressions estimating the elasticity between changes in concentration and changes in the fraction of employment in chains. The first column shows the results for all chained employment. This elasticity is 0.56, suggesting that an increased prevalence in chaining is correlated with the recent rise in national concentration. The second column shows the results for employment that is part of national chains, defined as in Foster et al. (2016) as firms with establishments in more than eighteen states. This elasticity of 0.45 suggests that national chains explain only part of the correlation between national concentration and chaining. Next we will examine changes in how chain expansion into new geographic markets affects concentration in local markets.

After exploring the connection between concentration and chaining, we turn to document the dramatic expansion of chaining across the economy. Figure 3 shows the time trend of the fraction of the economy’s total employment that is part of a chain. This fraction grows nearly 10 p.p. over the sample period. The trend in chaining varies substantially across the major sectors of the economy. The retail sector sees the greatest increase in chaining of over 13 p.p., while the sector comprising

TABLE 1: Regression of Δ fraction of employment chained on Δ national HHI

	$\Delta \log(\% \text{ emp. in chain})$		$\Delta \log(\% \text{ emp. national in chain})$	
$\Delta \log(\text{HHI})$	0.564***	(0.02)	0.446***	(0.02)
R^2	0.1413		0.1594	

Change.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

finance, insurance, and real estate actually sees a decline in chaining. We find that small, local chains as well as national chains contribute to the overall increase in chaining we observe. We also find that although changes in the length of existing chains are responsible for a large share of the overall entry and exit observed, the creation of new chains is nontrivial. We observe that the process of chain creation does not stop during our period, not even during the recession, and that that young chains are an important part of the expansion of chaining.

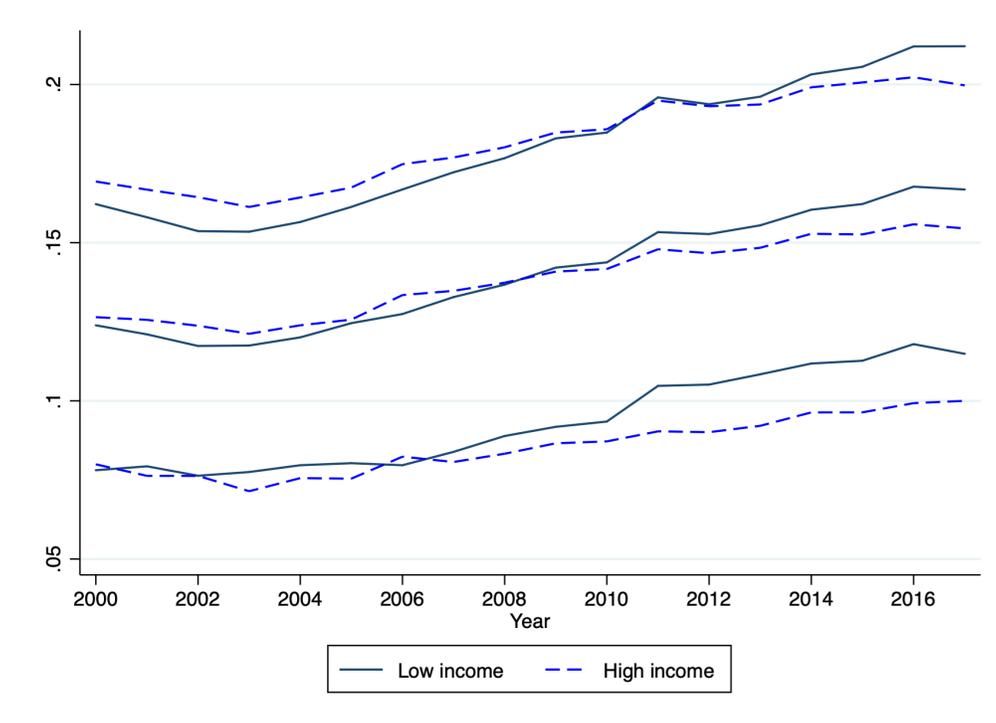
FIGURE 3: Time trend of fraction in chain



Finally, we return to exploring whether there is heterogeneity in the increase in chaining across counties with regards to a specific county-level characteristic: per capita income, which we found to explain variation in local concentration. A clear trend emerges in Figure 4. Greater chaining

in high income counties at the beginning of the sample is followed by a faster increase in chaining in low-income counties. By the end of the sample, chaining in low-income counties exceeds that in high-income counties.

FIGURE 4: Time trend of distribution of fraction chained across counties by high vs low income



This figure plots, separately for low income and high income counties, three moments of the distribution of the fraction of establishments in chain. Counties are designated as low or high income based on whether they are above or below the median at the beginning of the sample. For each income designation, we plot the evolution of the 25-th, 50-th, and 75-th percentile of the distribution of the fraction of establishments in chain across counties.

To the degree to which chaining and concentration are related, it becomes important to understand the causes of chaining and its impact on market structure. Several mechanisms could be at play including: demand side factors, learning, and technological change. The descriptive evidence presented in this paper sets the stage for future work, in which we will explore the process by which chains form and expand and the role of various mechanisms in shaping this process. We plan on building a structural model of entry and exit which accommodates these mechanisms and applying it to a particular industry.

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