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A New Timeline for Deindustrialization: The Movement of Auto Corporations in the US and Detroit

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Abstract

This article takes the first step in attempting to create a more accurate timeline of deindustrialization, which is generally understood as a process that begins and proceeds through the 1970s. I argue that this narrative of deindustrialization, which is very much tied to 1970s events, should be called into question, as the empirical evidence on corporate relocation tells a different story. The article tracks the regional movement of auto corporations out of Detroit and establishes a new timeline for corporate migration and deindustrialization, well before this generally accepted 1970s starting point. To do this it makes use of multiple collections housed in the Reuther Archives at Wayne State University and Moody's Industrial Manual Reports. In questioning the established timeline of deindustrialization, the article highlights other aspects of the process itself.

JEL Classifications: N00, N62, B50, P00.

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Introduction

Deindustrialization is a process that many economic historians acknowledge in passing, but relatively few analyze in-depth. Barry Bluestone and Bennett Harrison (1982, 6) initially defined this process as a "widespread, systematic divestment in the nation's basic productive capacity", resulting in a decline in manufacturing output, employment, and investment. Later, Bluestone (1984) revised the definition and moved toward a regional approach, arguing that the use of national aggregate data may confuse or mask the process of deindustrialization. This article draws from both in that it maintains an emphasis on manufacturing plant relocation for the auto industry that results in divestment, loss in output, and employment, but shifts the focus from a macro-perspective relying upon national data to a regional perspective.[1] However, whereas the regional unit of focus of Bluestone (1984) is the state and the broad geographical regions of the US, the regional focus of this article is much more localized, relying on the city as the regional unit of analysis, implying that the broader Bluestone regions also conceal the process of deindustrialization. Renowned historian Jefferson Cowie's (1999) research is consistent with this understanding of deindustrialization. Here he provides the rationale for domestic corporate migrations, and the effects of that migration on communities.[2]

However, the study of US deindustrialization as a body of inquiry addressed in economics has largely been presented as a function of events that transpired in the early 1970s with attention to trade, outsourcing, and globalization, a timeline initially presented by Bluestone and Harrison (1982). The large regional approach to their study, i.e., breaking the US into large regions, made it appear as if deindustrialization was a process that was linked to the 1970s. Other authors who have abided by or noted this timeline, including Ruth Milkman (1997), also pinned the decline and bade *farewell* to the factory beginning in 1970. Cowie and Joseph Heathcott (2003) further discuss the 1970s starting point for deindustrialization in the introduction to their edited volume, *Beyond the Ruins,* noting that this decade has been the assumed starting point for deindustrialization for quite some time. Additionally, Thomas Dublin and Walter Licht (2005, 3) also note that deindustrialization is a process that is usually linked to the 1970s, but takes place over a much longer period of time. More recently, deindustrialization as a process confined predominantly to the 1970s was reiterated by Judith Stein (2010). Stein argues that it is necessary to look back at the 1970s, which she deems as the end of the era of the factory, and the beginning of the process of deindustrialization. The widespread belief that the 1970s were the starting point for deindustrialization has also been acknowledged by scholars who refute this timeline, including historians Cowie (1999), Tami Friedman (2003), and Thomas Sugrue (1996) to name a few.[3]

There has been an implied acceptance of the 1970s as the starting point of the process of deindustrialization. Therefore, verifying this timeline is extremely important for empirical accuracy because the timing of deindustrialization would likely reflect the determinants of this

[1] This article uses the regional movement of auto corporations to address the process of deindustrialization. The reason for the use of corporate movement and factory locations is supported and explained below. Further, relocation is the best way, given the inconsistency and lack of availability of data on every plant and factory in all locations, to detail divestment, loss in output, and loss in employment. If a factory moves, or funding is directed elsewhere, these are the inevitable results. Additionally, the observable patterns that many address in the 1970s, that are argued to constitute deindustrialization (including the above variables), are evident long before the 1970s.

[2] This definition and view of deindustrialization combines the definitions used by Bluestone and Harrison (1982), Bluestone (1984), and Cowie (1999), and relies on some aspects gleaned from authors including Sugrue (1996) where a definition is not explicitly given. Indeed, it is rare to find an explicitly stated definition of deindustrialization.

[3] Sugrue (1996) comments on the 1970s timeline in the introduction to *The Origins of the Urban Crisis*, where he directly refutes the 1970s timeline, arguing that deindustrialization was a much longer and more involved process.

process. The argument presented here maintains that the generally accepted 1970s timeline that informs much economic scholarship on deindustrialization is incorrect. Deindustrialization is not the result of political and economic factors that emerged in the 1970s, but instead a feature of capitalist economic development that occurs over a much longer time horizon.

In doing so, this article brings forward a series of important questions about the timing of deindustrialization in the auto industry. While it maps corporate movement, part of the purpose of this article is to begin a conversation focused on the timing and process of deindustrialization. While I appreciate the importance of the Second World War in the (de)industrialization narrative, it is overlooked here as a dramatically atypical period for these businesses. This article therefore deals with the period 1940-1980 to problematize the conventional narrative that auto deindustrialization began and ran its course entirely in the 1970s.

To establish this new deindustrialization timeline, I use primary source qualitative and quantitative archival data to track corporate movement empirically through the examination of the location or relocation patterns of large auto companies that were fundamental to the development of what would become the so-called "Rust Belt".[4] Since corporate relocation precipitates deindustrialization, this article re-examines the deindustrialization timeline. However, this article does not discuss the reasons that corporations moved. It would be premature to discuss the historically specific reasons for corporate migration and deindustrialization prior to establishing and authenticating a new historical timeline.

Further, I argue that the process of deindustrialization was underway as early as 1940, when corporations first began to relocate outside of industrial production centers like Detroit. This outmigration of corporations negatively impacted these production centers and other areas known for their industrial capacity. In this research, deindustrialization is necessarily understood as a regional process. This allows us to analyze the impacts to the area of exit, and to avoid what might appear to be offsetting tendencies.

For example, when production facilities relocate, there is both exit from and entry into particular geographic areas. If we treat the exit and entry as part of the same event, and abstract from the local impacts, the process appears to have a near-zero net effect on output, employment, and investment, since the entry gains appear to offset the exit losses, at least in the short run.[5] Research that relies on national data effectively treats exit and entry as part of the same event since regional migration within the US, however localized, would not be reflected in macroeconomic data (Bluestone 1984). Therefore, in addressing this new timeline of deindustrialization, exit and entry must be treated as two separate events. We focus on the

[4] The "Rust Belt" is the geographical region that stretches from New York to the northern Midwest that was dominated by industrial manufacturing. The "Rust Belt" is generally synonymous with regions that are facing industrial decline. This area includes Michigan and Detroit, which are the focus of this article.

[5] Consider a stamping plant moving from Detroit, MI to Huntsville, AL. When the plant in Detroit shuts down it displaces 100 workers. When the new plant opens in Huntsville, 100 workers are hired to perform the same jobs. The Huntsville workers may receive wages less than or equal to the wages of the Detroit workers. Regardless of the outcome in Huntsville, the negative effects of the stamping plant exit on Detroit persist. There are still 100 workers in Detroit without jobs, income, and purchasing power, and Detroit is down one factory, with reduced productive capacity and tax revenues. Yet, net employment across regions has not changed, and there might even be an increase in net aggregate capital expenditures, given the new construction of the factory in Huntsville and the added machinery and equipment. Thus, it is difficult to ascertain the economic effects of deindustrialization with aggregated data. In fact, an aggregate net employment gain or an aggregate net change of zero in manufacturing employment is not inconsistent with deindustrialization. Further, deindustrialization is not inconsistent with the aggregate narrative detailed above, which is meant to disavow the process in its entirety. Rather, it flies under the radar of aggregate analysis and goes undetected because it is a regional process.

regional exit side of the deindustrialization story. This means that deindustrialization is, first and foremost, a regional phenomenon and applies to the area that experiences the capital exit.[6]

Literature Review

Bluestone and Harrison (1982) initiated the large-scale investigation into deindustrialization with their seminal work, *The Deindustrialization of America*. They introduce the process of deindustrialization to explain the causes and effects of the reduction in industrial activity and capacity from the late 1960s through the 1970s. They focus on three interconnected processes: the redirection of profits, the relocation of plants, and plant shutdowns. In doing so, their argument is organized further into three sections. The first concerns the general processes of deindustrialization mentioned above, the second addresses the effects of the neoliberal era, and the third speaks to the processes of reindustrialization and its future steps. However, there are issues with Bluestone and Harrison's (1982) analysis. Most significantly, their argument that deindustrialization is a product of the 1970s is highly problematic. However, when documenting the deindustrialization effects of corporate shutdown or relocation, their attention is riveted on outsourcing and the context of globalization and hinges on *Pax Americana.* More specifically, deindustrialization as an economic phenomenon emerges as a catch-all for the loss of manufacturing jobs, reduction in union bargaining power, and the subsequent effects on employment and wages.

In 1990, in a panel discussion on deindustrialization by the Pennsylvania Historical Association, labor archivist and historian Mark McColloch, who studied the steel and electrical manufacturing industries, indicated that deindustrialization in both of these industries "begins and is really well under way in the 1940s, 50s, 60s and 70s" (Clark et al 1991, 183). Fellow panelist and historian Carl L. Meyerhuber, who studied the labor movements and the coal strikes of 1922 and 1927 which introduced him to deindustrialization, contends that "there were no overseas villains in 1922 or 1927. The competition was inter-regional: mines opening in West Virginia, Kentucky, Tennessee" (Clark et al 1991, 183). For both McColloch and Meyerhuber, in opposition to the argument presented by Bluestone and Harrison (1982), deindustrialization is a phenomenon that dates much farther back than the 1970s. However, Meyerhuber also notes the (inter-) regional nature of the process of deindustrialization.[7]

Sugrue (1996) analyzes the same process of deindustrialization with attention to its disproportionate negative impact on the African American population in Detroit in *The Origins of the Urban Crisis*, in terms of employment loss and a deteriorating standard of living. Sugrue is interested in the role that racial inequality and discrimination played in the industrial decline of Detroit, intervening in the predominantly sociological debates surrounding the urban crisis. However, in tracing the devastating effects of deindustrialization on African Americans beginning circa 1950, Sugrue's narrative also reveals a timeline for corporate migration and deindustrialization inconsistent with the standard 1970s timeline.

Given that Sugrue (1996) focuses on Detroit and the predicament of African Americans, his analysis is not constrained by the events of the 1970s. He also writes amidst the economic

[6] Regional may involve the relocation of manufacturing from one city to another, or from one county to another, or migration across state lines, or from the Midwest to the South. In each case the deindustrialization narrative is about the city, county, state, or area of the country that is left behind. In other words, regional does not simply refer to different "regions" of the United States. As Bluestone (1984) notes, the latter runs the risk of masking the process of deindustrialization. Regional measurement must therefore take place on a small enough level so that deindustrialization is captured. The justification for using the city level as the regional unit of measure is made below.

[7] Here when Meyerhuber uses the phrase "inter-regional", it fits under the auspice of the different regional levels and the definition of regionality as discussed in this article. While the terminology is not the same, the overriding idea and argument are.

expansion of the 1990s with the advantage of distance from the immediacy of the events unfolding in the previous two decades. This gives him the advantage of scholarly hindsight in terms of the development and evolution (or not) of the deindustrialization literature and its critiques. Finally, as a historian, he does not report at the "broad brush-stroke" level, but rather pays attention to the narratives that unfold in local detail.

Cowie (1999) also addresses deindustrialization as he tracks the movement of the Radio Corporation of America (RCA) from 1930 to 1990. His focus is on the timing of RCA's corporate movements, with specific attention to the reasons and rationales for that movement. Consistent with Bluestone and Harrison (1982), Cowie (1999) argues that, in all cases, the geographical location decisions were driven by production cost considerations. While instructive in looking at deindustrialization, Cowie's objective is not to directly extend the timeline of deindustrialization, but to capture RCA's motivations to move its production facilities. However, *Capital Moves* provides some insight into how deindustrialization might materialize on a larger scale. That is, if we accept Cowie's account of RCA's motives we might expect to see similarities with other manufacturing firms.

This article addresses that behavior by utilizing the best available data to document the physical movement of plants and factories in the US, with specific attention to the auto industry and Detroit. It provides evidence of a new deindustrialization timeline, thereby adding to the current literature on deindustrialization. However, there is also a rich strand of this literature that does not document or discuss the specific movement of corporations, but instead focuses on the effects of corporate migration and the responses to it. While not directly related to extending the timeline of deindustrialization, these works still provide insights into the relocation of plants and factories, and should therefore be addressed briefly.

Dublin and Licht (2005) investigate the Pennsylvania anthracite region and address the destruction left by deindustrialization. They indicate that the industrial decline of the region reflected a substantial number of institutional policy failures. More importantly, the authors demonstrate that deindustrialization is not a rapid process, but one that evolves over a longer period of time: it is a phenomenon that can be traced.

Guian McKee (2008) also addresses deindustrialization but focuses on the responses of different interest groups to the attrition of Philadelphia's industrial base. McKee shows that as early as the 1920s, it became evident that there would be an irreversible decline in industrial activity. While the damaging effects of deindustrialization were acknowledged and solutions explored, Philadelphia eventually resigned itself to deindustrialization. This account shares elements in common with Sugrue (1996), but relates to driving forces unique to Philadelphia, with specific attention to race.

David Koistinen (2013) also addresses deindustrialization, providing an account of how policymakers and other stakeholders responded to the process of deindustrialization in New England in the 1920s, 1930s, and 1940s, with a focus on Massachusetts textiles. The timeline of his research clearly suggests a longer timeline for deindustrialization than the 1970s timeline observed by Bluestone and Harrison (1982). Consistent with the research in this article, Koistinen also indirectly shows that the process of deindustrialization is a predominantly regional phenomenon.

Returning to the auto industry, social and labor historian Stephen Meyer (2002), much like Cowie (1999), indirectly addresses the timeline of deindustrialization. He also does not critique or address the implications of the timeline since it was not the central focus of his research. Meyer examines the labor process and the meaning of work, coupled with changing factory production occurring across the period of deindustrialization, including the major inflow of high technology into the production process over this period. To illustrate this transformation, he details the automation and relocation of part of Ford's River Rouge Plant to the Brook Park production facility in Ohio in the 1950s and its impact on workers. Thus, like Cowie (1999), Meyer (2002) implicitly verifies that corporate movement and deindustrialization

occurred before 1970, at least in this particular instance, but, also like Cowie (1999), it is difficult to generalize these findings based on the experience of one plant.

However, while it is difficult to generalize, the single city, single factory narratives are relatively common. Lisa M. Fine (2003) discusses the decline of the Diamond Reo Truck Plant in Lansing, Michigan, in the 20-year period spanning the mid-1950s to the mid-1970s. Fine notes that Lansing suffered from many of the typical problems that follow deindustrialization and corporate movement: unemployment, economic depression, dislocation, and declining infrastructure resulting from a decreased tax base. Further, given the time period of her research, Fine does suggest a longer and earlier timeline of deindustrialization consistent with the research in this article, but there are hints that globalization might be the culprit. That is, Fine does not blame deindustrialization on the corporation itself, but instead on the failure of unions to provide a challenge to the mounting pressures of globalization.

While the pressures of regional moves may be more prevalent in my research, this is similar to many other narratives surrounding deindustrialization that fit into these distinctly regional accounts. This includes Amy Goldstein's (2017) more recent account of Janesville, Wisconsin, in which she details the demise of the Janesville General Motors Assembly Plant and the rationale for the movement of different production plants as recently as 2008. She refers to corporate relocation as a "bidding" for new production sites. Both Fine (2003) and Goldstein (2017), along with Cowie (1999) and Koistinen (2013), among others, reiterate many of the precepts set forward by Sugrue (1996) concerning factory and plant movement.

Deindustrialization, as a process, has long been confined by economic historians to the 1970s. Much of the literature discussed here hints at a longer timeline, but does not focus explicitly on defining and expanding this timeline or exploring what relocation looks like on an empirical level. This appears to be because of the dominance of the single town, single factory narrative, or because directly addressing the timeline of deindustrialization was not the intent or focus of the authors. While this literature offers insights on deindustrialization, the timing must be addressed to fully understand the process itself.

Tracing the New Timeline of Deindustrialization

The cases described in the review of the literature cover various aspects and details of deindustrialization. The objective of this article is to fill the current gaps in the literature and quantitatively rectify the assumed 1970s timeline of deindustrialization. That is, this article establishes a longer timeline for deindustrialization than is typical of single factory, single town narratives. It demonstrates that the 1970s timeline is inaccurate through mapping the empirical movement of auto plants and factories. In the process, it shows that the movement of auto corporations' manufacturing facilities is not an isolated event but a much more extensive process.

Therefore, with a focus on Detroit and the auto industry and attention to timing, this article establishes a new comprehensive timeline for the process of deindustrialization based on documented corporate movement. It divorces the process from its previous exclusively 1970s timeline and develops an alternative narrative consistent with the empirical movement of production facilities. However, as noted above, the focus of this article is not on the rationale for corporate movement, but on documenting and empirically verifying that movement; it is necessary to first establish and authenticate a new timeline of deindustrialization, before addressing the historically specific reasons for corporate migration and deindustrialization, which I will address in a future work (Battista 2022).

In examining corporate movement, the focus of the analysis is on the Big Three auto corporations (General Motors, Chrysler, and the Ford Motor Company) and the city of Detroit. I map the factory and year-to-year plant locations of the Big Three, recording where these

plants resided every year from 1940 to 1980, tracking and verifying corporate movement.[8] These data are presented in the form of both mapping and concentration tables. The data presented in these two forms are related, jointly clarifying the process of corporate movement. For example, the circles on a map may overlap visually due to close geographical proximity. The concentration tables therefore clarify the overlap and document the concentration of plants that are in the city of Detroit over time.

The mapping and concentration tables also rely on the best and most consistent data available to date. The argument predominantly makes use of the number of plants operated by the Big Three that are present in different geographical areas.[9] Further, to supplement and support the narrative, this article makes extensive use of primary source archival material collected from the Reuther Archives at Wayne State University in Detroit. This allows me to connect and confirm the new quantitative account being developed here with the qualitative information sourced from the archives to solidify the narrative.

In proceeding with these available data, the city limits of Detroit are used as the defining geographical demarcation and regional unit of analysis. As a reminder, deindustrialization is a regional process and care must be taken to not lose important information by making the regional unit of analysis too large. This informed the choice of Detroit and the use of the city as the regional unit of analysis. Aside from the potential for masking the process of deindustrialization by using aggregate data, looking at the Standard Metropolitan Statistical Area (SMSA), county, or larger regional area discounts much of the historical specificity behind the development of many cities both in metropolitan areas as well as those in (un)incorporated adjacent cities. For example, it matters that Hamtramck was the home to Chrysler production facilities and that the city of Detroit did not benefit from their presence or receive any of the tax revenue generated by the factory, regardless of proximity to the city itself. The same holds true for Ford and its Highland Park and River Rouge plants, among others.[10]

These factory towns did not have to cater to the city, the tax base, the tax rate, the city council, etc. in Detroit. Further, the factories in these cities opened very early in the process of deindustrialization and their development fits the narrative of deindustrialization presented here. However, this narrative highlights the importance of using the city level as the unit of analysis. The regionality of deindustrialization is not difficult to document and process on a theoretical and empirical level. This study establishes the importance of regionality in understanding and analyzing the process itself. Finally, deindustrialization applies to the

[8] Here the focus is on the Big Three auto manufacturers. American Motors, Hudson Motor Car Company, Packard, Studebaker, Nash-Kelvinator, and Kaiser Motors are not included. American Motors was formed by the merger of Nash-Kelvinator Corporation and Hudson Motors Car Company, and was acquired by Chrysler in 1979. Studebaker and Packard merged in 1954 and produced their final vehicle in 1966. While these companies all competed, the Big Three dominated the industry. AMC's 1961 market share was hovering around 5 percent and had fallen by 1966 to 2.51 percent of total car manufacturing. Therefore, focusing on AMC, or any of the smaller auto corporations identified above, is unlikely to alter or impact this article's conclusions.

[9] Clearly it would also be preferable to address the number of workers in each plant and factory, the level of output of each plant and factory, and the investment numbers for each plant and factory. Unfortunately, those data are not available from sources in the public domain. To address this problem I contacted the Ford, General Motors, and Chrysler archives, but received no responses. This reinforces the argument that this article uses the best data currently available and that this project adds essential quantitative and qualitative pieces to the deindustrialization narrative and analysis that have not yet been investigated.

[10] Further, using the SMSA as a unit of measurement would also create problems and inconsistencies across the narrative. Across different cities in the SMSA, different city councils and city governments preside. Therefore, wages are different, minimum wages are different, taxes are different, to name a few. If the SMSA is used, it abstracts from all this specificity. Therefore, the city unit of analysis is the most theoretically consistent when analyzing the movement of corporations.

region or area that experiences capital exit, higher rates of unemployment, and lowered rates of capital investment that further reduce employment prospects.[11]

In using these data, this article combines the quantitative mapping data that document specific corporate relocations with qualitative interview, testimonial, and reporting data from the Big Three that capture their strategic and purposeful movement out of Detroit to other areas of the country throughout this 1940-1980 period. This research demonstrates that corporations relocated out of Detroit with intent and purpose, and builds on earlier theorists by establishing a new timeline for the process of deindustrialization, divorcing it from its 1970s focus.[12] It also develops a quantitative argument surrounding deindustrialization that adds to the narrative presented by the authors above in a new way. In doing so, it aids in constructing the beginning of a new and more accurate economic history of deindustrialization.

Evidence of Deindustrialization Before 1970

There is ample undeniable evidence that deindustrialization occurred during the 1970s and proceeded throughout the 1970s. However, there is scant evidence that deindustrialization *began* in the 1970s. In fact, the evidence presented here demonstrates that the 1970s did not mark the beginning of production facility departures from central cities or their migration to the outskirts of industrial centers. The pattern of manufacturing migration observed throughout the 1970s is also evident in prior decades. Thus, if we are identifying this pattern as deindustrialization throughout the 1970s, we must also extend the timeline to include earlier periods where this pattern occurs and may even be more intense. This consistency necessarily extends the timeline of deindustrialization to at least as far back as 1940. In other words, deindustrialization is not a process that originated in the 1970s.

In fact, it would be quite extraordinary for a process typically thought of as complex to have ramped up over such a short period of time. I contend that the deindustrialization process began much earlier, at least as far back as the 1940s, and continued through the 1970s. If deindustrialization is specifically tied to the 1970s, the culprit is clearly globalization, outsourcing, and import competition as demonstrated by Bluestone and Harrison (1982), among others. If corporate migration and deindustrialization occur before the 1970s and appear to be a regular part of business behavior, then the determinants are likely to be internally driven rather than external shock, or something that is strictly tied to the supposed breakdown of capital-labor relations at the beginning of the 1970s.

However, we lack a systemic argument that deindustrialization was not confined to the 1970s as is generally assumed in the literature. Even in the literature that abides by some version of an extended timeline for deindustrialization, the movement of plants and factories is not directly proven or shown on a large scale. This study establishes an alternative account and timeline for relocating corporate operations and the process of deindustrialization that occurs in its wake. My research clearly shows that the accepted timeline is inadequate to explain deindustrialization in the city of Detroit. More importantly, however, we must reconceptualize the deindustrialization narrative, which relies on factors that emerged in the

[11] Dublin and Licht (2005) and others suggest the process of deindustrialization itself is often linked to the time and structure of the process of industrialization. It is not a period of decline that follows a period of prosperity, but rather we can see the beginning of deindustrialization in the movement of plants to these “factory towns” that were developed around a small number of factories. Therefore, the most accurate and consistent way to perform this regional study is to examine Detroit on a city, not a metropolitan, county, state, or larger regional level because too much essential information about the process and its effect is lost, given the regional nature of deindustrialization detailed above.

[12] The organic growth of different auto companies can also be seen as a reason for their relocation out of the production center of Detroit. This is part of the puzzle of the relocation of plants and factories, but is not specifically addressed in this article as it encompasses the details of the reasons for corporate movement.

1970s or that became more prevalent or intense during that decade, to explain both the longer and larger process of deindustrialization.

General Motors

The narrative of deindustrialization and its subsequent extended timeline in Detroit begins here with the case of General Motors (GM). The GM example provides evidence that corporate migration and deindustrialization occurred throughout the 1940s, 1950s, 1960s, and 1970s. To demonstrate, this section presents corporate movement in two ways. First, it presents both quantitative and qualitative evidence of the movement of a major corporation within the US. Second, it illustrates that while GM plants remained in Michigan, they migrated out of the city limits of Detroit. However, not all corporations exhibit this behavior of migrating to the outskirts of the central cities, i.e. staying in Michigan but not in Detroit. While this is true for GM, this pattern is not reflected in the cases of Chrysler and Ford (see below). Following this corporate mapping, this section also constructs concentration ratios for plants and factories inside and outside of Detroit over the same period, which captures the increased concentration of plants and factories outside of Detroit.

In the GM mapping below, the larger the dot, the higher the number of plants in that area. Likewise, smaller dots indicate a lower number of plants.[13] Figure 1 shows that in 1940, GM plants were already migrating out of the city of Detroit and out of other production centers, as evidenced by the fact that plants are being constructed outside of the Detroit city limits, even while Detroit was in its heyday. Further, while plants are still concentrated in Detroit, there is already evidence that some plants have been opened in other areas and other plants were moved from Detroit elsewhere throughout the country. Thus, corporate migration, in the case of GM began before 1940.[14]

In 1940, there is a concentration of factories in Detroit; but, by 1948, the number of plants in Detroit decreased from four in 1940 to two in 1948. This decreased concentration in Detroit was accompanied by a rising concentration of plants in other states, including Indiana, Ohio, Illinois, New Jersey, and Mississippi. However, Michigan still maintained, though to a lesser degree, its percentage concentration of manufacturing production from 1940 to 1948, though this concentration no longer resided exclusively in Detroit.

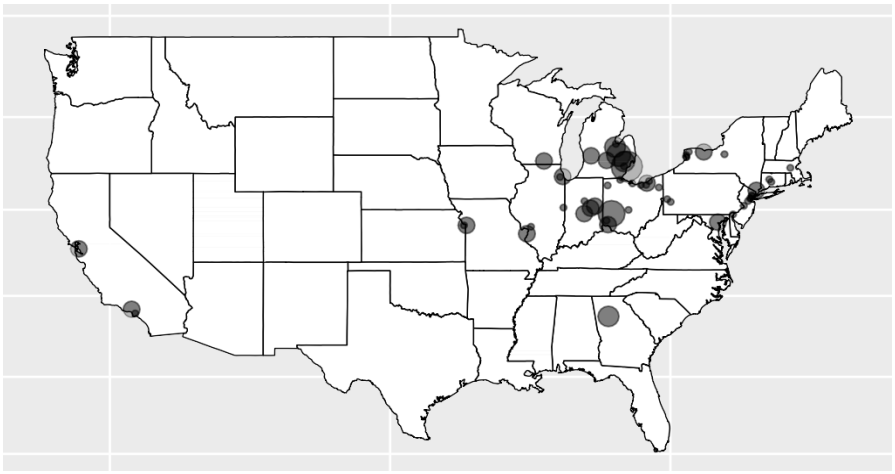
The key point here is that Detroit is negatively impacted when plants migrate out of the city limits. This impact is negative regardless of whether plants move just outside the city limits, move to other parts of Michigan, move to New Jersey, across the country to California, or abroad. Thus, GM plants are concentrated in and around Detroit in 1940 but shift away from Detroit by 1948. Further, looking at Figure 2, in 1950 and 1955, Detroit experiences an increase in the number of plants, by two, but still a decrease in the concentration of plants in Detroit versus other cities in the state, including Lansing, Bay City, and Flint. Thus, when looking at these larger SMSA (more macro) shifts, it is important to keep in mind that deindustrialization is still a relatively regional phenomenon at this time.

[13] There is a small caveat here. These dots represent concentrations in certain cities. For example, in 1940, there are four plants in Detroit, three plants in Flint, and two plants in Lansing. These circles overlap. The concentration ratios aid in clarifying this.

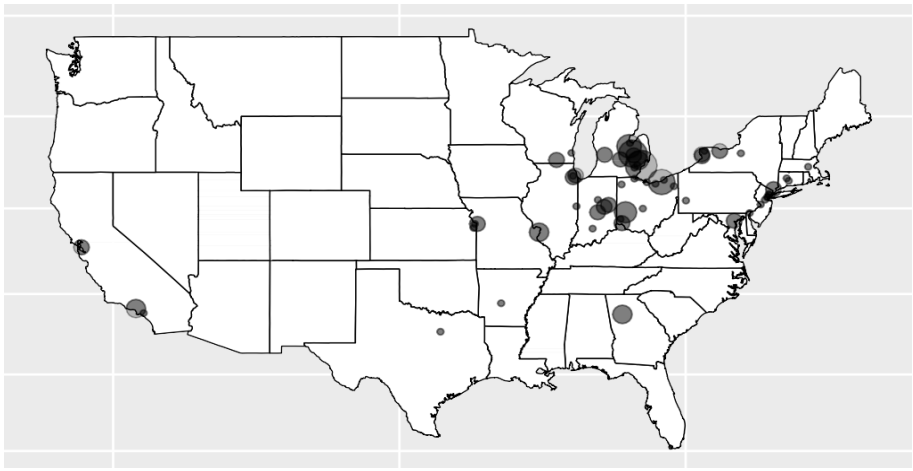
[14] It is interesting to note that many of these plants moved East and West, not necessarily South. The common narrative and assumption about deindustrialization, as noted in Bluestone and Harrison (1982), and commented on in Sugrue (1996), among others, is that these plants and factories moved to the South because of lower wages, lower unionization rates, lower taxes, etc. However, southern migration is simply not the pattern that is observed here. Therefore, this standard argument must be reformulated.

1940

1946



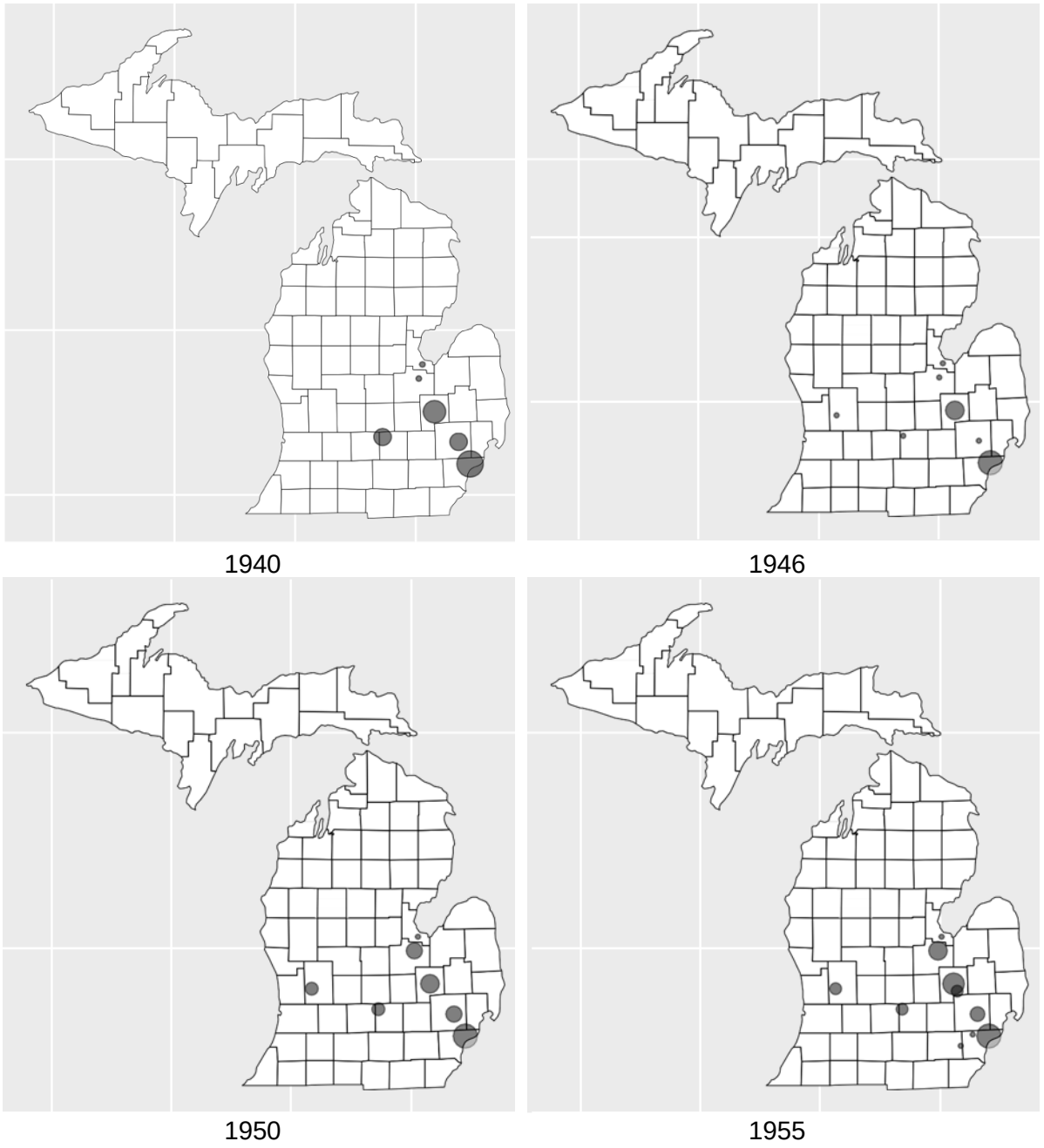
1950



1955

Source: Mergent (2018). General Motors Corporation. Moody's Industrial Manual. 1940, 1946, 1950, 1955.

Figure 1
GM Plant Locations 1940-1955



Source: Mergent (2018). General Motors Corporation. Moody's Industrial Manual. 1940, 1946, 1950, 1955

Figure 2
GM Plant Locations Michigan 1940-1955

That is, while it is important to track and understand the economic geography of Michigan, it is equally important to note that the negative impact on Detroit of plant exits or reduced concentration is not mitigated by the fact that the plants migrated to other parts of Michigan. The Michigan mapping clearly illustrates that from 1940-1955 there is an increased concentration of plants outside of Detroit, empirically verifying the exit of productive capacity and, in turn, the economic conditions for deindustrialization.

To reiterate, for GM from 1940-1955, we observe an increased concentration of plants outside of Michigan, given that plants relocate to other parts of the country. Further, for those plants that remain in Michigan, there is an increased concentration outside of the city of Detroit.

Following 1955, this trend continues with an increased concentration of plants moving East, as well as a concentration of plants in California, pictured below in Figure 3. Between 1971 and 1980, a select number of GM plants appear in the South, but most of these plants are designated as electrical components division plants. Thus, while there appears to be movement by GM to the South, it is mostly a migration of a specific type of plant.

Further, as GM's plants spread across the US, the same trend that is visible with respect to concentration outside of the city of Detroit but within Michigan continues. As corporate movement extends across the country and becomes more evident on a macro level, there is still an increasing concentration of GM's Michigan plants outside the city of Detroit. This is observed in the initial years: 1940, 1948, 1950, 1955. However, between 1960 and 1966 the process intensified, extending the narrative of GM migration out of Detroit. Thus, deindustrialization is operating on multiple regional levels, i.e., the nation, state, county, SMSA, and city.

This movement of facilities was not, and could hardly have been, covert. The United Auto Workers (UAW) were aware of this corporate movement: in May of 1962, Harry Chester, a research associate of the UAW, sent a detailed memo concerning Studebaker-Packard factory shutdowns in Detroit.[15] Here Chester acknowledges the relocation of assembly, machining, and stamping plants out of Detroit and the problems it causes for industry within the city. More importantly, however, Chester explicitly addresses the employment problems following factory shutdowns.[16] Further, in a memo to Woody Ginsburg, the research director for the UAW, from George Weaver, the Assistant Secretary of Labor for International Affairs, Weaver notes that by 1962 the combined output of automobiles in California, Wisconsin, Missouri, New Jersey, and Ohio was higher than that of Michigan. This meant that there was increased production trending throughout the mid-1950s and into the early 1960s, indicating that Michigan's production of automobiles is decreasing relative to the other five states. In 1962, Weaver stated that Chrysler's movement had affected Michigan, Delaware, Missouri, and Indiana once it became evident that production was shifting out of Michigan and Indiana and into Delaware and Missouri, in the form of assembly operations.[17]

In 1963 the UAW researched plant relocations with a focus on the Big Three automakers. According to the UAW, the automakers did not release their records for new plant construction to the research branch of the union. Instead, the UAW gleaned most of the information about new plant construction from news releases and newspaper articles concerning plant closures and relocations. In 1963, GM was constructing new assembly plants across the country with locations planned for Lordstown (Ohio); Kalamazoo, Saginaw, and near Tecumseh (all Michigan); Saint Therese (Quebec, Canada); Bethpage and Long Island (New York); and Anderson (Indiana).[18] This new construction leads to the conclusion that in

[15] As noted previously, Studebaker-Packard is not included in the quantitative data in this study, but the closing of these factories supports the deindustrialization narrative presented here.

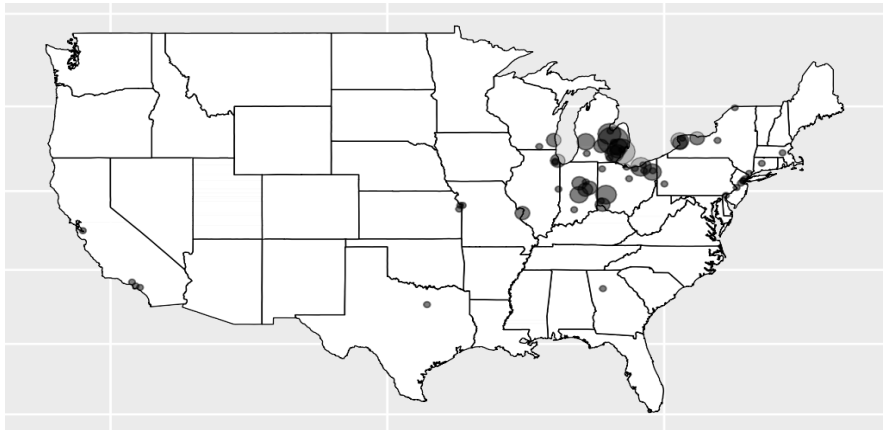
[16] Walter P. Reuther Library, Archives of Labor and Union Affairs, Wayne State University. UAW Special Projects Division, Part 1, Box 42, Folder 9. "Correspondence to Tom Simon from Harry Chester, with reference to Packard Study." 1962.

[17] Walter P. Reuther Library, Archives of Labor and Urban Affairs, Wayne State University. UAW Research Department Collection [hereafter UAWRD], Series 2, Part 1, Box 12, Folder 6. "Inter-Office Communication, George Weaver to Woody Ginsburg." 1962.

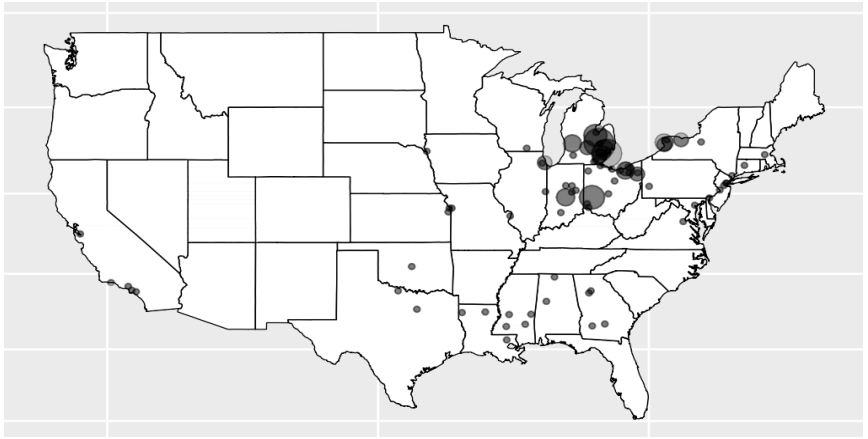
[18] UAWRD, Part 1, Box 44, Folder 13. "Ralph Robinson, Competitive Shop Department, Don O'Neal, Research Department, Information and locations of the 'Big 3's' Current New Plant Construction." March 5, 1965.

1960

1966



1971



1980

Source: Mergent (2018). General Motors Corporation. Moody's Industrial Manual. 1960, 1966, 1971, 1980.

Figure 3
GM Plant Locations 1960-1980

1963, the auto industry no longer focused its investment on production centers in Detroit, redirecting it to these other locations.

However, while there is increased plant construction, it is not solely new plant construction, *per se*, that matters, but also new plant construction as an indicator of the direction of new (and future) investment away from Detroit.[19] In 1964 in Fremont, California, Frederick G. Donner, Chairman of GM, announced a two billion dollar factory expansion program involving 39 plants that included additions, expansions, and updates to currently operating factories (35) plus new factory construction (4 factories). None of these four new factories was built in the vicinity of Detroit, and only two of the remaining 35 factories that GM had planned to update and expand were in the Detroit locale.[20] In other words, only 5.7 percent of the plants affected by this plan were in the Detroit area. Thus, Detroit was a relative loser in the GM strategic plan. More aptly, this does not just show that Detroit lost relatively when it came to GM production in the early 1960s, but that plant investment was shifting (or had shifted) and being redirected away from Detroit. The remaining plants receiving new investment were located in Ohio, Georgia, Texas, New York, Illinois, Maryland, Wisconsin, and Indiana. Thus, GM increasingly directed investment out of the Detroit area well before the standard timeline would suggest.[21]

Moreover, the process of this relocation was two-fold in the case of GM. First, there was a migration of plants from Detroit to Michigan locations outside of the city limits, reducing the concentration of its plants in Detroit. There was, however, a small increase in the concentration of plants in Michigan, which occurred simultaneously with the migration of GM plants across the US that continued through the 1970s, as depicted in Figure 4 and Figure 5.

This relocation activity is observed when documenting the locations of plants as they move out of Detroit, but also evident when examining the concentration of plants both inside and outside of the Detroit city limits. The concentration ratios presented in this article supplement the data presented on the maps by displaying the percentage of plant concentration outside of Detroit. While the maps show corporate locations, the concentration ratios aid in illuminating and specifying plant concentration. Table 1 illustrates the increased concentration of plants outside of Detroit over time from 89 percent in 1940 to 93 percent in 1960, well before the standard deindustrialization narrative begins in 1970, and remains constant at this level.

Thus, the migration of GM production facilities out of Detroit begins at least as early as the 1940s and initializes the process of deindustrialization. The concentration ratios remain relatively constant from the mid-1940s into the 1980s, with no discernible change or indication that anything new began in 1970. However, the maps illustrate that many of the GM plants migrated out of Detroit but not necessarily out of Michigan, a point reinforced by Table 2. To remain consistent with the mapping data and to drive the argument about corporate relocations presented here, Table 2 shows the concentration of GM plants inside and outside of Detroit but within the state of Michigan. A grouping of plants remained in Michigan, but the concentration of those plants outside of Detroit increased over time.

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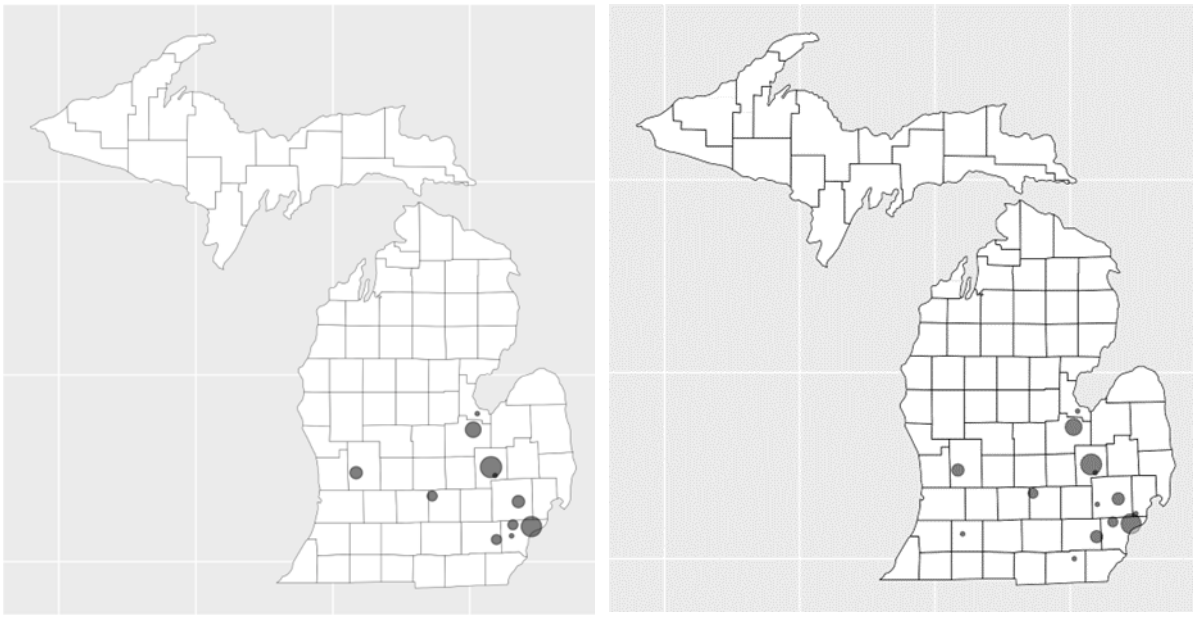
[19] Both Bluestone and Harrison (1982) and Cowie (1999) address the redirection of profits and define it as deindustrialization. Here, the redirection of profits can be seen both in the 1963 new construction GM engaged in, and in the new 1964 investment plan. Bluestone and Harrison (1982) directly refer to the "redirection of profits." For them, this is one of the main ways that deindustrialization proceeds. Cowie (1999), instead of directly referring to the "redirection of profits," does so through his "cash-cow" argument. Here companies allow factories to continue to operate, but continuously take the profit generated by that factory and reinvest it elsewhere. This eventually drives the "cash-cow" factory into obsolesce and eventual shutdown. Therefore, this fits under the definition of deindustrialization for these scholars.

[20] UAWRD, Part 1, Box 44, Folder 14. "Press Release, Announcement of Frederick G. Donner, Chairman of General Motors." 1964.

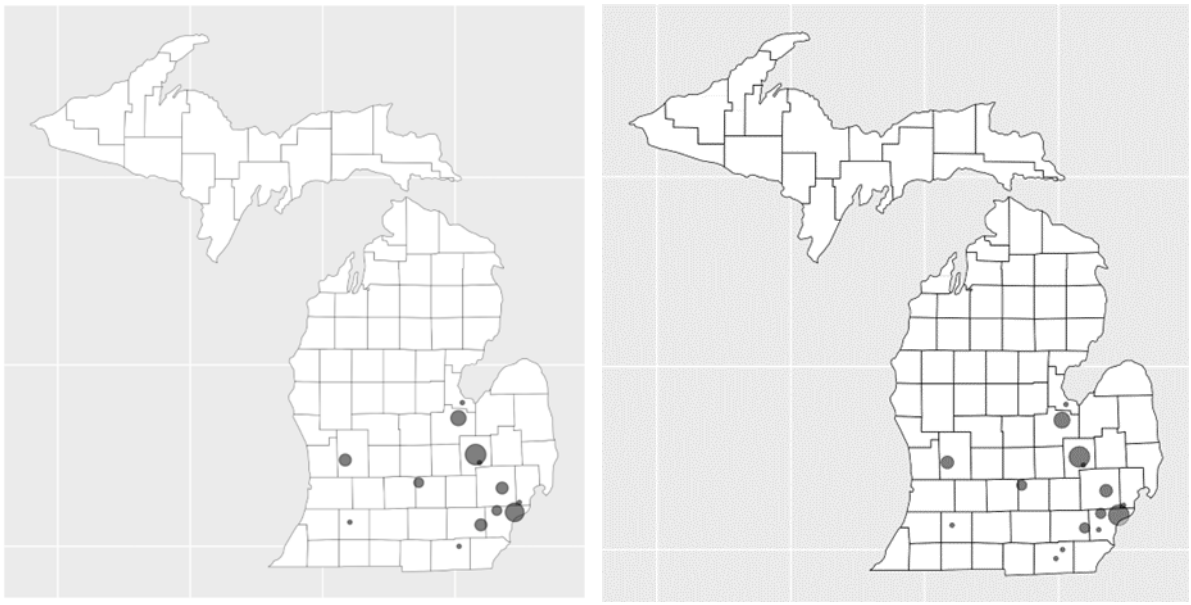
[21] Ibid.



1960 1966

Source: Mergent (2018). General Motors Corporation. Moody's Industrial Manual. 1960, 1966.

Figure 4
GM Plant Locations Michigan 1960 and 1966



1971 1980

Source: Mergent (2018). General Motors Corporation. Moody's Industrial Manual. 1971, 1980.

Figure 5
GM Plant Locations Michigan 1971 and 1980

Table 1
GM Plant Concentration In and Out of Detroit (US)

Year	Concentration Outside of Detroit (%)
1940	89
1946	92
1950	92
1955	92
1960	93
1966	93
1971	93
1980	93

Source: Mergent (2018). General Motors Corporation. Moody's Industrial Manual. 1940, 1948, 1950, 1955, 1960, 1966, 1971, 1980.

Table 2
GM Plant Concentration In and Out of Detroit (Michigan only)

Year	Concentration Outside of Detroit (%)
1940	69
1946	70
1950	68
1955	73
1960	77
1966	80
1971	80
1980	80

Source: Mergent (2018). General Motors Corporation. Moody's Industrial Manual. 1940, 1948, 1950, 1955, 1960, 1966, 1971, 1980.

The GM experience exemplifies the regional nature of deindustrialization and directs our attention to the effects of deindustrialization on the areas of exit. If we did not examine these areas of exit separately, but rather looked at exit and entry as part of the same process, we would miss the process of deindustrialization. That is, on a more aggregated level, the offsetting tendencies of exit and entry—out-migration from Detroit matching in-migration to other locations—mask the process of deindustrialization entirely.[22]

The GM mapping, coupled with the tables showing the increased concentration of plants outside the city of Detroit, provide empirical evidence that GM's corporate exit from Detroit and the process of deindustrialization began at least three decades before the 1970s. As noted previously, the 1970s therefore simply continue a process set in motion decades earlier. Thus, for GM, the deindustrialization narrative begins as early as 1940 and should be analyzed as such, beginning with factors that initiated corporate exit unrelated to trade and globalization.

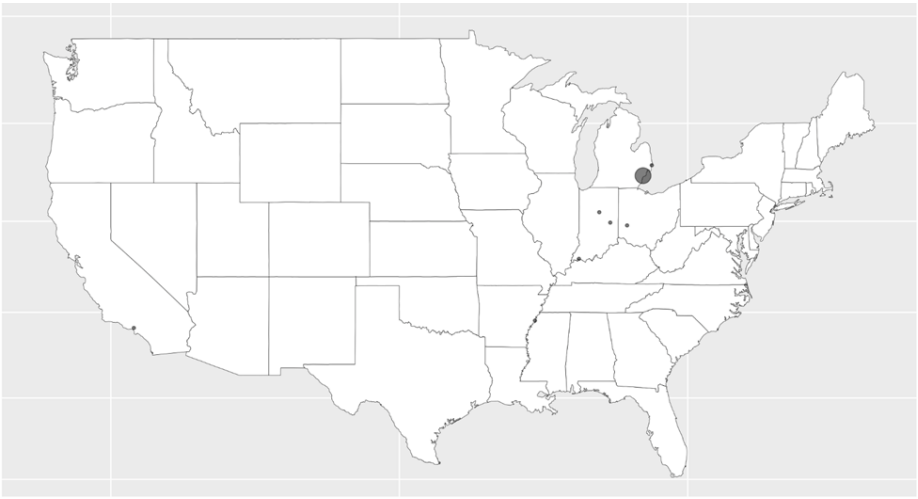
[22] Corporations both relocated from Detroit and also chose to open additional factories in other parts of the country, instead of Detroit. Therefore, there are two components of deindustrialization, new investment and relocation. While this argument is not explicitly addressed here, it does not present an issue, because the trend that is seen throughout the 1970s, when deindustrialization is commonly assumed to have proceeded, is evident much earlier.

Chrysler Corporation

Chrysler exhibits a similar pattern to GM in terms of corporate movement but follows a slightly different timeline. Between 1940 and 1980, the Chrysler Corporation's production declines as a percentage of US total automobile production. While GM is consistently the largest of the Big Three, Chrysler in 1939 accounts for 22.7 percent of US total automobile production and 26 percent of the total production of the Big Three. However, by 1950, its share of total automobile production is just 18 percent and 21 percent of the production of the Big Three, and by 1954, it drops to 13.1 percent and 13.7 percent respectively (Stanley Boyle 1974). Non-Big Three automobile companies get competed out of the market, and Chrysler's share of automobile production continues to fall. Both GM and Ford increase their shares of both total automobile production and the Big Three automobile production. GM specifically continues to increase its share of automobile production as the Big Three compete other automobile companies out of the market (Boyle 1974).

Chrysler's consistent loss of production share, both in terms of total automobile production across the market and as part of the Big Three, and smaller size, may make a difference for the story of deindustrialization. Chrysler may not have been the first mover, and instead followed the lead of GM given that GM consistently dominates nearly 50 percent of the automobile production market. However, while GM's corporate movement is evidenced beginning in 1940, the movement with Chrysler does not occur on a large scale until 1950. Further, Chrysler's movement is completed by the 1970s, with the exception of a few last minute, small-scale moves. This timeline distinction reinforces the argument that deindustrialization began before 1970 and is a product of an earlier time.

In 1940, as expected, Chrysler plants are largely concentrated in the production center of Detroit, but they do have manufacturing sites outside of the Detroit and Michigan area (see Figure 6). These plants are located in Ohio, Arkansas, Indiana, and California. Thus, while there is not yet evidence of corporate movement for Chrysler, it is clear that automobile production facilities, even in 1940, are not wholly located within Detroit.



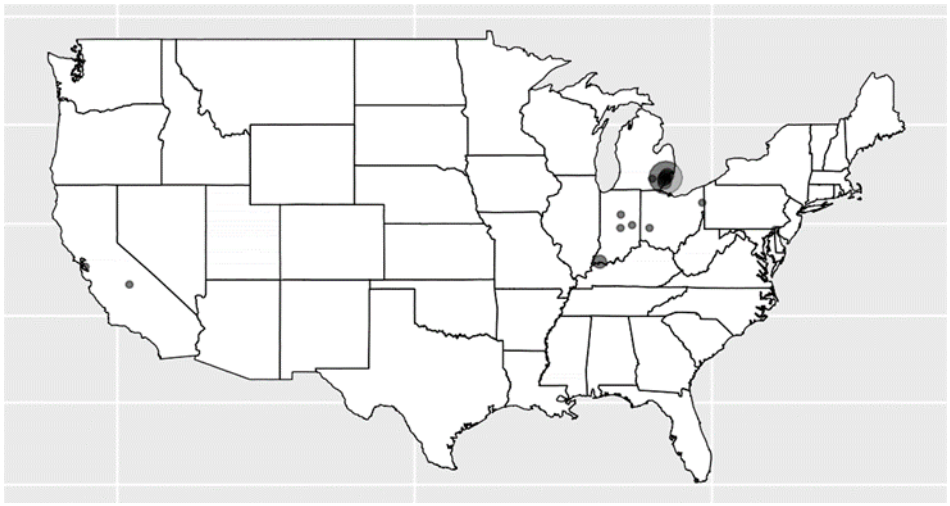
Source: Mergent (2018). Chrysler Corporation. Moody's Industrial Manual. 1940.

Figure 6
Chrysler Plant Locations 1940

As Figure 7 shows, Chrysler 1951 is almost identical to Chrysler 1940. However, between 1951 and 1956, there is an increased concentration of Chrysler plants outside of the Detroit area that includes locations in Ohio, Indiana, New York, and Delaware. Thus, the large-

scale Chrysler corporate movement commences in 1951 and gains momentum in subsequent years.

1951

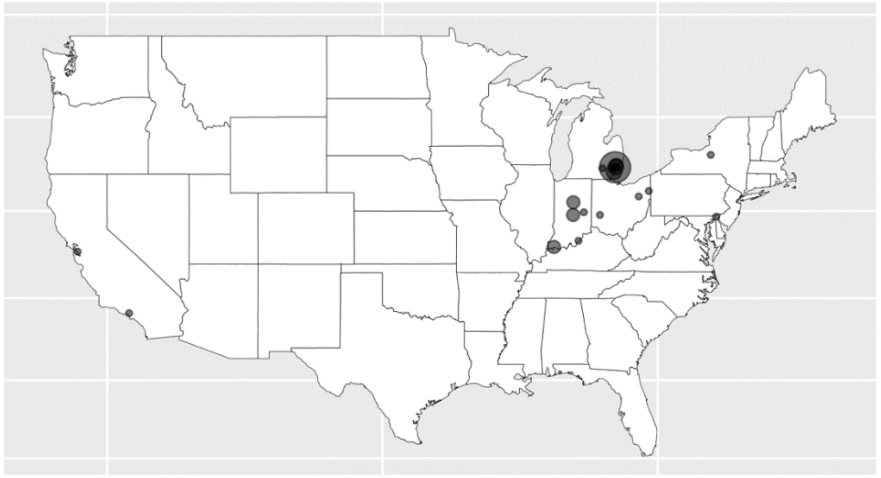


1956

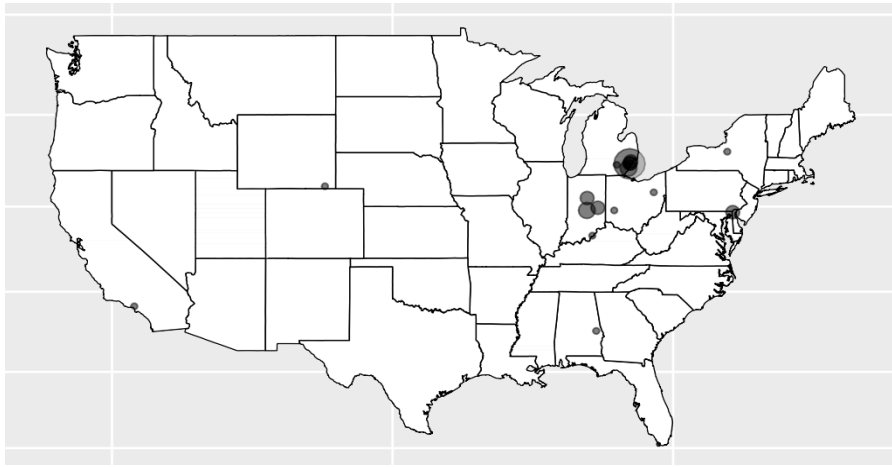
Sources: Mergent (2018). Chrysler Corporation. Moody's Industrial Manual. 1951, 1956.

Figure 7
Chrysler Plant Locations 1951 and 1956

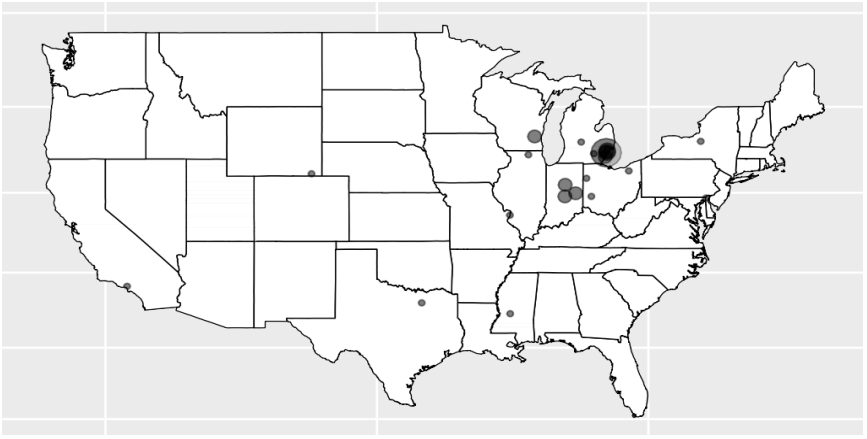
Following 1956, Chrysler corporate movement accelerates again, and by 1958, it is clear from the mapping in Figure 8 that production plants are no longer centered in Detroit but have expanded across the country to New York and Delaware, and to a much greater degree Indiana and Ohio. Further, from 1958 to 1969, the decentralization of production continues from Detroit-centered operations to other parts of the country. Chrysler constructed at least seven new plants in 1963: Natick (Massachusetts); Cedar Grove (New Jersey); Belvidere and Northlake (Illinois); Minneapolis (Minnesota); Indianapolis (Indiana); and Van Wert (Ohio). Therefore, much like GM, Chrysler was constructing plants and diverting funding outside of



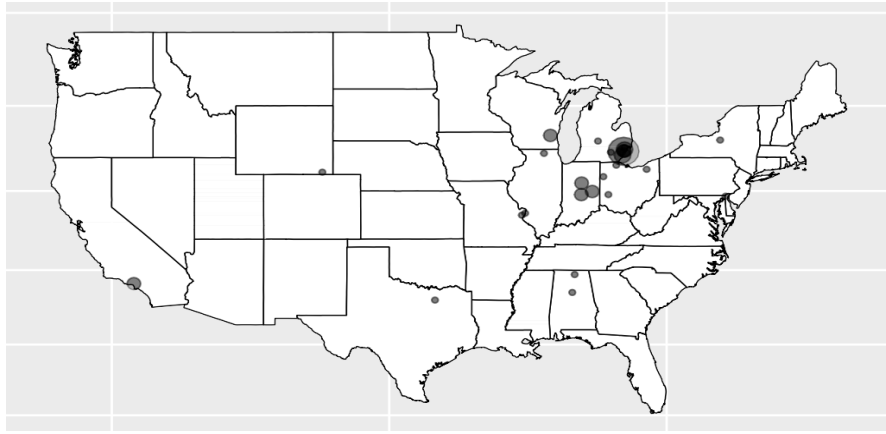
1958



1963



1966



1969

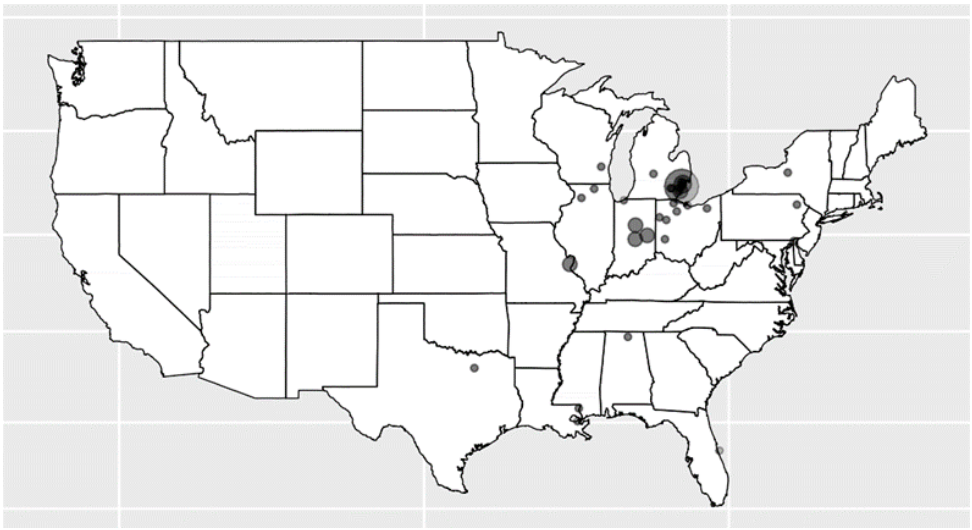
Source: Mergent (2018). Chrysler Corporation. Moody's Industrial Manual. 1958, 1963, 1966, 1969.

Figure 8
Chrysler Plant Locations 1958-1969

Detroit and outside of Michigan more generally.[23] Thus, the decentralization of production associated with deindustrialization, and the corresponding lack of investment in the traditional production centers like Detroit, is clearly reflected in the movement of Chrysler. This is an important point, given that new investment in other areas and decentralization are two sides of the same coin.

Chrysler exhibits corporate movement later than GM; its movement takes off beginning in the 1950s, and accelerates throughout the 1960s, suggesting that even though they were "late to the party", they still "arrived" before the 1970s. Thus, one would have to expand the timeline to include the decades before the 1970s to capture the relocation activity of Chrysler and its constituent plants and factories. However, Chrysler offers an interesting case of deindustrialization, at least in the US, because of its pattern of relocation. Chrysler exhibits some movement after 1969 with a few plants moving to the South (see Figure 9), but no

1976



1980

Sources: Mergent (2018). Chrysler Corporation. Moody's Industrial Manual. 1976, 1980.

Figure 9
Chrysler Plant Locations 1976 and 1980

[23] UAWRD, "Ralph Robinson, Competitive Shop Department, Don O'Neal, Research Department, Information and locations of the 'Big 3's' Current New Plant Construction." March 5, 1965.

extensive movement, which is more reminiscent of the scale of movement that occurs pre-1955. Thus, it seems that the majority of corporate movement, and in turn deindustrialization, at least for Chrysler, occurred between 1950 and 1970.

In the Chrysler instance, there is enough evidence to verify that corporate movement occurred before 1970, but insufficient to support the standard 1970s timeline of deindustrialization. Along with this timeline reformulation, the case of Chrysler also lends another complicating factor to the standard narrative. One of the main themes in the more traditional arguments regarding deindustrialization is that many companies moved to the South. However, in Chrysler's case the evidence indicates that before moving to the South, factories migrated both East and West. While a southern migration may have immediately precipitated migration abroad, this is certainly not the entirety of the corporate migration and deindustrialization story. Further, the narratives of both GM and Chrysler challenge the standard timeline and tell a regional story of deindustrialization, and the mapping of Chrysler factories also undermines the standard narrative.

Similar to the case of GM in Table 1, Table 3 reports the concentration of plants outside the city of Detroit over time. For Chrysler, we observe an increased concentration of plants inside the city of Detroit through the 1940s and into the 1950s. In 1940 and 1951, there is a low concentration of plants outside of Detroit at 37 percent and 33 percent respectively. However, following 1951, the concentration of plants outside of Detroit increases from 33 percent in 1951 to 73 percent in 1966, and remains constant at 74 percent through the 1970s.

Table 3
Chrysler Plant Concentration In and Out of Detroit (US)

Year	Concentration Outside of Detroit (%)
1940	37
1951	33
1956	51
1958	62
1963	68
1966	73
1969	74
1976	74
1980	74

Source: Mergent (2018). Chrysler Corporation. Moody's Industrial Manual. 1940, 1951, 1956, 1958, 1963, 1966, 1969, 1976, 1980.

While the concentration of plants in Detroit decreases later in the case of Chrysler than in the case of GM, the same rationale applies. That is, the migration of plants and factories out of Detroit in the 1950s and 1960s marks the beginning of Chrysler's role in Detroit's deindustrialization. This evidence not only corroborates the narrative of deindustrialization advanced here, but more importantly, supports the argument that deindustrialization is not strictly linked to the 1970s.

Ford Motor Company (Assembly Plants)

This new and extended timeline of deindustrialization is also confirmed by the activities of the Ford Motor Company (Ford). In general, it is difficult to track all Ford production facilities because their available records fail to identify the types of plants, and the location of those plants, other than inside and outside Detroit. However, there is more consistent reporting of the location of Ford assembly plants throughout the country from 1940-1980. Therefore, the

location of these plants is used as an indicator for Ford corporate movement. Even with the more selective data reporting by Ford, the deindustrialization trend is still observable. This, coupled with direct reporting by Ford on the location and relocation of plants, develops a consistent narrative and pattern of corporate movement.[24]

In 1940, Ford production is centered in what we earlier referred to as the Rust Belt. The majority of its assembly plants, as depicted in Figure 10, are located in Michigan, with a concentration in Detroit as well as some plants located on the outskirts. It is important to document the latter to establish that assembly plants are already located outside of the city limits of Detroit in the 1940s. At this point, the manufacturing centers in Michigan include Detroit, Dearborn, and Northville. The lesser but also important areas include Iron Mountain, on the border with Wisconsin, as well as Pequaming and L'Anse, Michigan, which are much smaller manufacturing locations. Further, as early as 1940, assembly plants spring up in New York, initially on Green Island, and later in Buffalo as well as other cities in western New York state. Plants also emerge in northern Indiana as well as in Minnesota. This 1940s snapshot is not direct evidence yet of deindustrialization, *per se*, because assembly plants are still concentrated in Detroit.

Sources: Mergent (2018). Ford Motor Company. Moody's Industrial Manual. 1940.

Figure 10
Ford Assembly Plant Locations 1940

However, following this 1940 snapshot, factories and plants begin to relocate out of Detroit. In 1946, at the behest of Vice President Benson Ford, the company opened a new plant in New Jersey that amounted to an $8.5 million investment. This reveals Henry Ford II's plan to move corporate production east, i.e., from Detroit to New Jersey and to New York (Buffalo). In addition, in a public interview, Benson Ford also disclosed plans to move

[24] In the collection of the Ford location data, many locations are not consistently included. However, the assembly plants are reported consistently. Therefore, to remain consistent in my collection of factory locations, only those plant types that are consistently recorded are included. In the case of Ford, this is assembly plants.

production west to Los Angeles.[25] Thus, in 1946 (not 1970), auto corporations made and executed investment plans that involved relocation to other parts of the country, along with plant exits from Detroit.

Implementation of these plans significantly changed the corporate concentration with the majority of assembly plants located outside of Detroit by 1947. In 1950, Ford President Henry Ford II delivered a speech entitled “What Kind of Citizens Are We?” to the Buffalo Chamber of Commerce, immediately after Ford decided to move a production facility to Buffalo, New York.[26] According to Ford II, Ford would build a pressed steel plant that would eventually employ upwards of 3,500 people, including 3,200 hourly workers. Further, the facility would contribute 42 percent of total pressed steel manufacturing to the entire company. In addition, the new plant would add roughly $13 million to the annual payrolls of Buffalo, with total aggregate wages paid out estimated at $18-$19 million.[27]

Sources: Mergent (2018). Ford Motor Company. Moody's Industrial Manual. 1947.

Figure 11
Ford Assembly Plant Locations 1947

Ford II also noted that this was part of a larger Ford policy to geographically expand manufacturing facilities on a company-wide basis. Not only did Ford II advocate capital movement, but also argued that greater decentralization of production, i.e., moving factories out of production centers like Detroit, and spreading them out across other locations throughout the country, would result in greater flexibility.[28] While we do not know for certain what Ford II meant by greater flexibility, it does follow that a company who does not feel

[25] UAWRD, Part 1, Box 12, Folder 17. “Ford Starts $8,500,000 Plant in New Jersey,” Detroit Times. March 18, 1946.

[26] UAWRD, Part 1, Box 83, Folder 3. “What Kind of Citizens Are We? Address by Henry Ford II, President of the Ford Motor Company, Annual Meeting of the Buffalo Chamber of Commerce, Buffalo, NY.” February 23, 1950.

[27] Ibid.

[28] Ibid.

obliged to answer to organized labor or the state is necessarily more flexible in the sense that their actions and behaviors are less constrained.

Ford II publicly declared in 1950 that the company would be changing its production, investment, and plant construction policies. Investment would no longer take place in the company's established industrial centers, but would be directed to other areas in the North, South, and East (and eventually to the West as well). One should not take Ford II's message lightly since it refers to the outmigration of $18 million in wages and the transfer of 3,500 jobs from the unionized North to the non-unionized or more recently (i.e. weaker) unionized regional location, and a clear path to deindustrialization.

While the number of Ford assembly plants had increased by 1956, only four of these were located in Michigan, and none in the Detroit area. The remainder were spread across the country including Georgia, Virginia, New York, Illinois, Texas, and California (Figure 12). Thus, by 1956 we observe the movement of physical capital out of the city of Detroit, and production redirected to other areas, much like the pattern observed with Chrysler. This reflects the process of deindustrialization as investment and employment are redirected to locations outside of Detroit. Further, the movement out of Detroit was a conscious strategy on the part of Ford as it was for Chrysler and GM.

Sources: Mergent (2018). Ford Motor Company. Moody's Industrial Manual. 1956.

Figure 12
Ford Assembly Plant Locations 1956

On November 4, 1957, Benson Ford, Vice President of Ford and now Chairman of the Lincoln-Mercury Dealer Policy Board, addressed the Automobile Dealers Association in Biloxi, Mississippi. After 1945, Benson Ford noted that there has been a "tremendous surge of commerce and industry throughout the south, and the Ford Motor Company, along with other automobile manufacturers, have been happy to share in that growth".[29] Ford's address played

[29] UAWRD, Series, Box 45, Folder 1. "Address by Benson Ford to the Automobile Dealers Association, Biloxi, Mississippi." November 4, 1957, 1.

to the southern crowd, but it also detailed the strategic planning and investments made by Ford after 1945.

Beginning in the mid-1940s, Ford investment in facilities in the South more than tripled, with Ford publicly affirming that they had become a substantial part of the southern economy.[30] This tripling specifically included the introduction of five assembly plants, nine parts depots, a glass plant, and an aluminum foundry. It involved a $400 million investment (in 1940 dollars) in plant and equipment and resulted in 56,000 jobs.[31] Both the changing geography of plant location and the redirection of investment is consistent with the process of deindustrialization and cannot be overlooked, especially given the planning, the execution, and the announcement of what appears to be a well-thought-out corporate strategy.

Thus, in the 1940s, the auto industry began to leave Detroit and channeled investment into other US locations. However, the southern migration was not the only migration that left deindustrialization in its wake in the 1940s and 1950s.

Both the Ford narrative and data provide more evidence that deindustrialization, precipitated by corporate relocation, began in the 1940s. Yet, there is a more interesting timing aspect to note. Like Chrysler, Ford corporate movement tends to taper off, and we observe no significant movement after 1956. This means that from a corporate movement standpoint, there is very little change from the mid-1950s, raising further doubts about the 1970s timeline.[32]

Nevertheless, by 1964, a higher concentration of assembly plants is visible in the South, including Alabama, Tennessee, Georgia, and in the East, including New York and New Jersey (see Figure 13). This corporate movement to other areas of the country indicates that there is a continued effort on the part of capital to shift investment from Detroit and its surrounding areas, to the South, West, and East.

By 1979, only four assembly plants remain in Michigan in the Detroit area, yet the map of plants has not dramatically shifted from 1964, with the exception of consolidation into fewer plants, with some in the South disappearing (see Figure 14). To interpret, the Ford assembly plant data indicate that while corporate migration and deindustrialization did occur in the 1970s, it began much earlier in the mid-to-late 1950s, and merely continued declining gradually in the 1970s. As a result, we do not observe any significant shifts in concentration during the 1970s.

Table 4, much like Table 1 and Table 3, reflects the concentration of Ford (assembly) plants outside of the city limits of Detroit from 1940 to 1980. While these data are for assembly plants only, and are therefore slightly more limited, the same trend that is visible for GM and Chrysler is also evident in the case of Ford. Indeed, as Table 4 demonstrates, the trend is more extreme in the case of Ford.

[30] As noted at the beginning of this article, the purpose is not to discuss the rationale for corporate movement, but instead to discuss the timeline of corporate movement. It is enough to say that different rationales for the movement of plants and factories attracted different companies to different areas of the country. Further, given the reformulation of the timeline of deindustrialization, the reasons for corporate movement must also be reframed. This is the topic of a different paper (Battista 2022).

[31] UAWRD, “Address by Benson Ford to the Automobile Dealers Association, Biloxi, Mississippi.” November 4, 1957.

[32] There seem to be three very different corporate strategies here for GM, Chrysler, and Ford in terms of both time of movement, i.e., 1940s, 1950s, 1960s, and areas to which they migrated. While not the topic of this article, this merits future investigation.

Sources: Mergent (2018). Ford Motor Company. Moody's Industrial Manual. 1964.

Figure 13
Ford Assembly Plant Locations 1964

Sources: Mergent (2018). Ford Motor Company. Moody's Industrial Manual. 1979.

Figure 14
Ford Assembly Plant Locations 1979

Table 4
Ford Assembly Plant Concentration In and Out of Detroit (US)

Year	Concentration Outside of Detroit (%)
1940	42
1947	50
1956	100
1964	100
1979	100

Source: Mergent (2018). Ford Motor Company. Moody's Industrial Manual. 1940, 1947, 1956, 1964, 1979.

In 1940, the majority of Ford assembly plants were located in the city of Detroit. By 1947, they were evenly split, with the concentration of plants outside and inside Detroit at 50 percent each. However, by 1956, 100 percent of assembly plants were located outside of Detroit, with none remaining within the city limits. However, the maps reveal that there were still assembly plants located in the state of Michigan, and there were other types of Ford plants in Detroit after 1956.

The Ford assembly plant experience is consistent with the argument that has been presented about the regional nature of the process of deindustrialization. Moving production just beyond the city limits reduces capital investment and tax revenues for Detroit, puts Ford employment beyond the reach of many (though not all) workers, resulting in job losses for city residents, declines in income and purchasing power, and the multiplier effects that are set off. Further, given that lack of movement and concentration following 1956, it is clear that Ford assembly plants made a quick and early exit from Detroit, in contrast to the standard timeline. Therefore, this is also consistent with the more general timing argument surrounding deindustrialization presented here. The concentration table adds credence to the argument that deindustrialization occurred prior to 1970. In the case of Ford assembly plants, the entire process had run its course by 1956, with no continued activity through the 1960s and 1970s.

The histories of GM, Chrysler and Ford documented in this article all deviate from the standard timeline and narrative of deindustrialization for Detroit. They establish both a new timeline and a different pattern of corporate migration. That is, when analyzing the quantitative narrative on physical plant (re)location, it is clear that deindustrialization and corporate movement were not a phenomenon of the 1970s, but a longer and more involved historical process.

Conclusion

Deindustrialization has been generally understood as a process that began in and proceeded throughout the 1970s. This timeline, while rarely analyzed in depth, is taken as a given by many scholars. However, the empirical evidence on corporate movement in the Detroit auto industry shows a different story. In framing this narrative, I have established a new timeline for deindustrialization based on the empirical patterns of corporate migration that began as early as the 1940s. Using the best available quantitative and qualitative data from the auto industry, the article has extricated the process of deindustrialization, especially as it unfolded in Detroit, from the 1970s timeline. In the auto industry and Detroit, deindustrialization was under way well before the generally accepted 1970s starting point. Thus, the 1970s timeline that informs a large swath of economic literature on deindustrialization is incorrect for the Big Three Detroit car makers.

This article shows that the process of deindustrialization was underway as early as 1940. Focusing on the Big Three auto corporations (General Motors, Chrysler, and the Ford Motor

Company) and the city of Detroit, the research underlying this article mapped the factory and year-to-year plant locations of the Big Three, identifying where these plants resided every year from 1940 to 1980. This allowed for corporate movement to be verified and tracked. The relocation of auto manufacturing operations was not a finite event. It was not a limited process that was imitated and occurred over a single decade, but, instead, a more extensive process.

This article rewrites the timeline of auto company deindustrialization, thereby challenging the generally accepted timeline for the process of deindustrialization more widely. By adding to the current literature on deindustrialization and empirically supplanting the standard narrative as a 1970s event, it also creates the space for the development of a new large-scale narrative of deindustrialization. In other words, it forces us to rethink and reconsider other aspects of deindustrialization such as its causes and effects. Therefore, a new history of deindustrialization must accompany this changing timeline that is not necessarily tied to 1970s stimuli such as globalization which other authors identify as a key factor.

This article directly adds another aspect of the analysis of deindustrialization to the current literature: deindustrialization is primarily a regional phenomenon. It is difficult to explain the process of deindustrialization without understanding it as a regional process. Using large regions and macro-regional frameworks obfuscate the true nature of deindustrialization and the process itself through errors of aggregation. The choice of regional unit of analysis makes it possible to misconstrue or misidentify the process of deindustrialization. Without making the unit of analysis small enough, the city level in the case of this article, it is easy to misunderstand the timeline and trajectory of deindustrialization. This approach also offers a signpost to scholars on deindustrialization, not just in the US but elsewhere, as well in terms of both approach and timeline.

In addressing these issues, this article combines the quantitative mapping data that documents specific corporate locations, with qualitative interview, testimonial, and reporting data from the Big Three that captures their strategic and purposeful movement out of Detroit to other areas of the country throughout this 1940-1980 period. Corporations relocated their manufacturing operations out of Detroit with intent and purpose. The importance of developing a quantitative argument surrounding deindustrialization is clear: it makes new additions to the deindustrialization narrative in its construction of a more accurate history of this process and marks the first step in a new economic history of deindustrialization.

As noted above, establishing a new timeline for deindustrialization not only changes the historical trajectory of the process, but also carries with it many implications for the process itself. Much of the economic history surrounding the process of deindustrialization in the “Rust Belt” needs to be rewritten. More directly, the next step is to revisit and revise the rationales for corporate movement that are consistent with the longer time horizon that begins at least as early as 1940. This includes the reasons corporations migrated their production operations out of Detroit, the push and pull factors of that migration, the political factors in both the area of exit and areas of entry, and union presence and pressure, to name a few. To address these important issues, this article has taken the first step in empirically establishing a new timeline of deindustrialization.

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