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SEAPORT ACTIVITY AND LOCAL ESTABLISHMENT DYNAMICS

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Abstract

International trade has many potential influences on domestic economic activity. Perhaps the least understood is the influence of the actual movement of goods. The dramatic increase in container flows through San Pedro Bay in Los Angeles provides a natural starting point for studying the effects of international goods movement on local economic activity. In this paper, we study the effect of increased container flows on establishment dynamics near the ports and their related rail facilities. Having the potential to either expand or contract activity in these areas, we find that growth in port activity has disadvantaged these regions as port activity has increased. We find that establishment growth and therefore the economic prospects of these areas was slowed by port activity. Although international goods movement may well expand economic opportunity domestically, it does not serve communities close to the ports at all well.

I. Introduction

Traditionally, research into the effects of international trade on economic activity has been restricted to the impact of trade, or its liberalization, on the production of manufactured goods. More recently, this focus has expanded to trade in services and how offshoring, or outsourcing to a foreign source, affects employment patterns. Ignored, however, is the process of moving goods from one country to another and its impact on economic activity. Involving the movement of more than 16 billion tons of goods across U.S. borders in 2004, this activity will inevitably require significant domestic resources.

The notion that employment in goods movement industries increases with increased international trade will not stir much controversy. Also gaining greater acceptance is the notion that neither changes in international trade nor activities supporting it affect overall levels of national output; aggregate U.S. output is primarily a result of policies pursued by the Federal Reserve. At the same time, however, changes in international trade and its supporting activities can have significant local effects. As an

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example, the decline of the U.S. automobile industry was accompanied by tremendous unemployment in Flint, Michigan. Just as increased imports can eliminate jobs in particular industries, the need to move these imports across the ocean and around the country is likely to create jobs and increase economic activity.

The implications of this activity are most likely to be felt in areas where it is intensively undertaken: near air-, land-, and sea-ports. Because of the volume moved, roughly 85 percent of all trade by weight, and the use of multiple modes of transportation, from ship to truck and or train, seaports have the greatest potential to impact local economies. In addition, waterborne goods movement is highly concentrated in a small number of large port facilities. The United States has in excess of 250 formal port facilities; however, nearly 75 percent of the volume of this trade, by weight, is processed by the top 25 facilities. In particular, the ports of Los Angeles and Long Beach, positioned next to each other on the San Pedro Bay in Los Angeles County, facilitate the movement of 40 percent of all U.S. containerized cargo.

Between 1995 and 2004, activity at the ports of Los Angeles and Long Beach grew from just over 5.4 million to 13.1 million twenty foot equivalent units (TEUs). This represents an enormous increase in demand for services provided by the transportation, warehousing, and logistics services industries. Though not all of these services need be provided locally, many will be. In particular, this growth has dramatically increased the demand for truckers. As of 2004, container flows have grown to require between 35,000 and 40,000 trucks calling at the port complex. As the majority of these containers are destined for locations well outside of California, these trucks generally transport containers to warehouses, distribution centers, and intermodal rail facilities. Both the number of such facilities and the amount of labor employed by them has increased significantly in the greater Los Angeles region.[1]

However, this increase in port related activities has the potential to crowd out other sources of economic or employment growth. The movement of containers has in recent years dramatically increased congestion on local roads and highways and generated significant air and noise pollution in nearby

[1] Husing, 2004, is the only study of which the authors are aware that details the growth in port-related employment.

communities.[2] These negative externalities – congestion and pollution – may serve to reduce the desirability of locating a business establishment near the ports or related facilities. It is also possible that economic entities related to port activity, in particular warehousing and distribution centers, could, through their increased demand for scarce commercial real estate, result in the relocation of other economic activity to areas outside of the hotspots.

Given these opposing forces on economic activity, the extent to which port activity is a source of economic growth in the region, here, Los Angeles County, is an empirical question. Furthermore, it is not necessarily the case that the effects are evenly distributed throughout the county. In particular, the externalities are likely to be the most significant in areas proximate to the ports and intermodal facilities; physical activity related to goods movement is highly concentrated near these focal points. As much of the ancillary port activity can be located at a distance to the ports, it is possible that areas near the ports are more likely to experience the negative effects of externalities than are areas more distant; establishments that located near the ports when activity was lower may now find it in their best interests to relocate and firms seeking to place a new establishment may find these areas less desirable than others.

The purpose of this paper is to investigate the effects of increased port activity on establishment dynamics in a narrow segment of Los Angeles County. This segment includes areas near the ports and intermodal rail facilities, what will be referred to as "hot spots", and compare establishment dynamics in these areas with the rest of the county. In the absence of growth in port activity, areas near the ports should, all else equal, see establishment growth comparable to the rest of the county.

To address this issue, we turn to the National Establishment Time Series (NETS). The NETS dataset consists of proprietary data assembled by Walls and Associates in conjunction with Dun & Bradstreet (D&B). This dataset includes, in principle, all business establishments in the United States. Our access to these data is limited to an extract of establishments that were ever located in California

[2] See California Air Resources Board, 2005, for evidence on the pollution generated directly by port activity and by activity at intermodal rail facilities.

between 1992 and 2003, including those in Los Angeles County. These data indicate location down to the street address in addition to employment, sales, and industry in each year.

With this establishment level data, we approach the issue of establishment dynamics in these regions, near hot spots, and elsewhere in Los Angeles County, in two ways. To provide background, we present raw data on establishment changes. This exercise will provide an indication of the influence of port activity on the prosperity of the two regions. Of course, there are many other potential sources of differential growth in these regions and these factors, including: changes in the demand for the output of establishments more heavily concentrated in one region or the other; changes in the size of the market in the two regions, in particular, differences in population growth and local economic income; changes in access to major transportation infrastructure; and changes in the economic and demographic characteristics of the regions.

Accordingly, we turn to regression analysis in an attempt to disentangle the various sources of employment growth in the two regions of the county. In this analysis, we will control for a variety of factors, including proximity to the ports and rail facilities, those related to changing circumstances in particular zip codes, both related to industrial activity and the local population, and national trends in industry employment. This effort will provide an indication of the extent to which locating in hot spots is more or less desirable than locating elsewhere in the county.

Our results suggest that areas in close proximity to the ports and intermodal facilities have fallen behind other parts of the county. During periods of declining establishment creation county-wide, the hotspots held their own in terms of establishment creation. However, during periods of establishment growth, the hotspots grew more slowly. Through an analysis of new establishment locations, regions near the ports appear to be less attractive locations to start a new business. We attribute this to the dramatic increase in port activity in the 1990s.

In the rest of this paper, we provide a description of the data used in the analysis, discuss the characteristics of areas close to the ports relative to the rest of the county, we provide summary evidence on the nature of establishment growth inside and out of hotspots, and detailed statistical evidence of the

effects of increased port activity on establishment growth in the hotspots. A final section provides concluding remarks.

2. Data

The NETS Database

The National Establishment Time Series (NETS) is the result of recent efforts by Walls & Associates to link together cross-sectional files of the full Data Universal Numbering System (DUNS) Marketing Information (DMI) file. This file is maintained by Dun and Bradstreet (D&B) and is a continuously updated database, representing an ongoing effort to provide current information on American businesses. The primary purpose of D&B's data collection effort is to provide its clients with credit information that depends on a constructed set of "predictive indicators" (e.g., the D&B Rating and PayDex scores) or contact information that is used for marketing purposes. Our version of the NETS database utilizes 14 historical snapshots of the data that includes all business establishments that were ever located in California between 1989 and 2002, and their particular headquarters (regardless of U.S. location). Over the sample period the database includes information each year on between 1.2 and 1.8 million establishments in California providing about 15 million to 18 million jobs. The data set—in particular the longitudinal component that tracks establishments over time—is complicated; Neumark, Zhang, and Wall (2005) should be consulted for an extensive assessment of advantages and limitations of the NETS database.[3]

While the NETS database consists of many dimensions of information about included businesses, our primary interest in the NETS database concerns its information on establishment and openings and

[3] Neumark, Zhang, and Wall (2005) have undertaken a good deal of investigation to document and examine the quality of the data in order to provide an accurate assessment of the reliability of the data, their potential limitations, and how these limitations might affect the results. Among their chief strategies are comparison of employment levels with other large datasets (ES-202, BED, and CES), comparison with reported business relocations from newspaper articles, and comparison with inferred openings and closings from phonebook listings. They also describe D&B's extensive methods of data collection.

closings. Because the dataset if a time series that includes the universe of all establishments in Los Angeles County, we are able to track not only births and deaths of establishments, but movements into and out of specific regions within the county.

Zip Code Demographic Data

The regression analysis of section 5 makes use of demographic data by zip code to control for changes in the local environment that could also affect the locational choices of new and existing business establishments. These data are collected from the Summary File 3 (SF3) datafiles produced by the U.S. Census Bureau to accompany the release of each decennial census. Here, we make use of the 1990 and 2000 SF3 datafiles. These files provide for significant detail on social, economic, and housing characteristics of most zip codes throughout the United States. More precisely, they provide summaries of a variety of characteristics by Zip Code Tabulation Area (ZCTA) in addition to census blocks and Congressional Districts. The ZCTA regions closely match zip codes used by the U.S. Postal Service, but do sometimes differ.

Constructed Data

Table 1

Variables: Names, Description, and Sources

Name	Description	Source
BIRTHS	Number of new firms in the zip code, whether a startup or relocating from another zip code.	NETS
DEATHS	Number of firms in the zip code that either shut their doors or move to another zip code.	NETS
NETEMPCHG	Births – Deaths	NETS
RESIDENT	A measure indicating how residential the zip code is. Defined as zip code population divided by zip code employment.	NETS and SF3
POP	Zip code population.	SF3
POPWORK	Working age population in the zip code.	SF3
MEDHHINC	Median household income in the zip code	SF3
PCWHITE	Percent of population that is white in the zip code.	SF3
PCBLACK	Percent of population that is black in the zip code.	SF3
PCHISP	Percent of population that is hispanic in the zip code.	SF3
UNEMP	Percent of zip code residents who are unemployed.	SF3
NAICSCHG3	Percent change in national employment in each 3-digit NAICS industry in each period.	BLS
DIVERS	Measure of industrial diversity of a zip code. Constructed as a Herfindahl index of all employment shares omitting own industry share.	NETS
EMPCONC	Share of own industry employment of zip code employment.	NETS
NZIPEST	Number of establishments in the 3-digit NAICS industry in the zip code..	NETS
ESTSIZE	Average establishment size in the zip code.	NETS
PERIOD	Dummy variable indicating the early period (0) or the latter period (1).	Constructed by authors
HOTSPOT	Dummy variable indicating zip codes in hotspots.	Constructed by authors
HOTSPOT_P	HotSpot * PERIOD	Constructed by authors

3. Characteristics of Hotspots

In this paper, we define a hotspot to be a geographic area within three miles of a port or intermodal rail facility. Our data do not permit the calculation of the distance of individual establishments from ports and associated rail facilities. They do, however, identify the zip code in which establishments are located. Consequently, our analysis is based on a comparison of establishment dynamics across zip codes. We identify zip codes as being located inside a hotspot if its centroid is located less than three miles from the center of a port or rail facility. Note that this strategy will include establishments not strictly within a given hotspot as being a part of trends in the hotspots; although the centroid of the zip code may lie within a hotspot, some of the geographic area included in the zip code will lie outside of the hotspot.

Figure 1 graphically depicts the areas labeled as hotspots and plots the centroids of each zip code in Los Angeles County.[4] In the figure, squares indicate ports and rail facilities and the shaded area around them indicates the extent of the particular hotspot. Zip code centroids are indicated by either small circles or triangles. Triangles indicate zip codes included in the regression analysis presented in the next section. Highways and railways are also included to provide a reference to locations within the county.

As several of the port and rail facilities are in close proximity, the scope of their respective hotspots overlaps to some extent. Although there are 9 separate facilities -- 2 ports and 7 intermodal rail -- there are only three distinct hotspots and the majority of the hotspot zip codes belong in only two, those near the ports and those in downtown LA. The third is further east, incorporating much of the cities of Industry, La Puente, and Valinda.

Figure 2 provides a better indication of the geographic areas that are included in the hotspots. The largest hotspot is located in central Los Angeles and includes a significant portion of the downtown

[4] In order to enhance the relevant detail on the graphic, we have cropped the map of the county on the north, east, and west sides. In so doing, we eliminate the marker for some zip code centroids, but none of these zip codes are used in the regression analysis presented below.

area, including the Civic Center, East Los Angeles, Echo Park, Montecito Heights, Boyle Heights, Terrace, the Bell Gardens area, and the City of Commerce. Further south, and directly surrounding the ports, this last hotspot incorporates much of the cities of San Pedro, Wilmington, Carson, and Long Beach. In general, these regions fall within Supervisory District 1, although there is some overlap with District 2.

Table 2 provides an indication of the demographics of zip codes in Los Angeles County, both those in hotspots and those outside. Several characteristics of hotspot zip codes are immediately apparent: first, as evidenced by a low ratio of population to zip code employment (RESIDENT), these areas are more industrial than is the rest of the county; second, these areas are heavily Hispanic – with the proportion double that in other zip codes; third, household incomes are low – with median household income just over two-thirds of those in other zip codes; and finally, they are areas of relatively high unemployment – 10.5 in the hotspots and just 7.0 outside. Between 1990 and 2000, a period of rapid growth in port and related activities, these differences were significantly increased. In hotspots, the proportion Hispanic increased significantly, nominal median household income grew by just 4 percent, whereas it grew by 23 percent in other areas, and the unemployment rated increased significantly to 15.6, more than double that in other areas.

Table 2

Summary Statistics for Zip Codes

	1990		2000	
	All Zips	HotSpot	All Zips	HotSpot
RESIDENT	3.1	2.0	3.9	2.2
POP	33,387	39,117	35,806	41,673
POPWORK	20,368	22,496	21,264	23,719
MEDHHINC	39,131	27,312	48,283	28,419
PCWHITE	62.5	43.9	54.2	35.8
PCBLACK	10.2	9.4	8.8	9.2
PCHISP	31.1	57.7	33.4	63.8
UNEMP	7.0	10.5	7.4	15.6
Number	276	29	330	29

It should be noted that although the zip codes within the hotspots are clearly home to disadvantaged groups, low income and minority, it is also the case that many areas outside of the hotspots are similarly populated. In particular, areas outside of the hotspots include Florence, South Central Los Angels, West Adams, significant portions of San Pedro, and other sections of Los Angeles heavily populated by lower income and minority groups.

4. Local Establishment Dynamics

In general, the decade of the 1990s was a tumultuous one for Los Angeles county. As is well documented, the first half of the decade was characterized by recession, during which a significant restructuring of the Los Angeles economy occurred. This is evident from the steady decline in the growth rate of establishments between 1992 and 1999 (Figure 3). The following 3 years saw tremendous growth in the number of establishments throughout the county, though the growth rate was significantly lower in the hotspots than elsewhere. Peak growth outside of the hotspots was nearly 30 percent while it was just over 20 percent in the hotspots.[5]

In the Introduction of this paper, we indicate reasons why there might be differences in establishment growth in hotspots relative to the rest of the county. Here, we provide evidence on changes in the growth rate of establishments in zip codes the centroid of which is located within three miles of either a port facility or an intermodal container transfer facility (ICTF). The selection of three miles as the cutoff is reasonably arbitrary. However, we have looked at employment changes in concentric circles that are very small and growing larger. The employment effect that we find here gradually deteriorates as the circles grow in size. Three miles is a distance that we believe to be small enough to capture the essence of our argument, yet large enough to include significant areas and amounts of economic activity.

Figure 3 provides an indication of establishment growth in the county, providing a chart for establishment growth outside of the hotspots (the top chart) and a similar chart indicating growth rates of

[5] It is important to keep in mind that these changes occur over three year intervals.

establishments inside of the hotspots. In both regions, the experience of establishment growth is characterized as declining in the fist part of the 1990s and expanding in the latter part. Outside of the hotspots, the early 1990s is characterized as slow growth gradually declining until the late 1990s and then explosive growth in the last several years of the decade and the first part of the next. In the hotspots, the trend is similar, but growth was higher at the very start of the 1990s and the growth in the right hand side of the chart is significantly lower than that elsewhere. The timing of the turnaround is similar in both regions.

Between 1993 and 2002, the number of establishments in the hotspots grew by 23.7 percent while it grew by just 20.1 percent in the rest of the county (Table 3). However, breaking the period into two roughly equal parts, it is clear that the patterns of growth are quite different. Whereas most of the growth within the hotspots occurred prior to 1998, the reverse is true outside of the hotspots. In the latter part of the 1990s and early 2000s, it is clear that owners of establishments reversed their preferences over location. Locations within the hotspots became less desirable than those outside.

Table 3
Establishment Growth in Los Angeles County

	Inside HotSpots					
	Levels			Percent Change		
	1993	1998	2002	93-98	98-02	93-02
Agric., Mining, & Const.	2.0	2.0	2.1	-0.8%	7.3%	6.4%
Manufacturing	6.2	6.2	6.2	-0.1%	0.4%	0.3%
Wholesale and Retail Trade	17.4	19.2	20.8	10.4%	8.2%	19.5%
Transportation Services	1.7	1.8	2.0	8.9%	10.3%	20.2%
Other Service Sectors	21.6	26.0	29.3	20.5%	12.5%	35.6%
Total	48.9	55.2	60.4	13.0%	9.4%	23.7%
	Outside HotSpots					
	Levels			Percent Change		
	1993	1998	2002	93-98	98-02	93-02
Agric., Mining, & Const.	25.8	25.3	26.2	-1.8%	3.5%	1.7%
Manufacturing	27.6	26.6	27.0	-3.8%	1.4%	-2.5%
Wholesale and Retail Trade	84.9	85.4	91.2	0.6%	6.7%	7.4%
Transportation Services	6.3	7.4	8.6	16.8%	16.9%	36.5%
Other Service Sectors	203.8	230.2	265.5	12.9%	15.3%	30.2%
Total	348.5	374.9	418.4	7.6%	11.6%	20.1%

Though this trend does not hold uniformly over industries, the two major sources of establishments among the industries listed in Table 3, Wholesale and Retail Trade and Other Services, both exhibited this preference. Other sectors, such as Agriculture, Mining, and Construction, Manufacturing, and Transportation Services, reveal no such preference, growing faster in both regions after 1998. The effect is strongest for the Other Service category. As many of these sectors are highly dependent on labor as an input, it is possible that locating in an area with significant pollution is an impediment to growth; workers may be opposed to accepting a position with a firm in this region while opportunities exist elsewhere.

5. The Determinants of Local Establishment Dynamics

Study Design and Methodology

The evidence presented in the previous section indicates that, after 1998, areas proximate to the San Pedro Bay ports and rail facilities were less prosperous than those in the rest of Los Angeles County. In this section, the underlying causes of this are examined difference in greater detail. In particular, regression results are presented that explain establishment dynamics as represented by net new establishment creation in areas close to the ports relative to the rest of the county. Although establishment births have traditionally been thought of as leading indicators of economic prosperity (Carlton, 1983), deaths are also important contributors to employment changes locally. Although we also present results for births and deaths separately, our focus here will be on net establishment creation across zip codes and the extent to which it is affected by port related activities.

As discussed above, the port related activities that are directly relevant are those related to moving containers. Rather than using a measure of container flows directly, data limitations, and methodological considerations suggest using an epochal approach. That is, we have broken our data into two time periods, the period from 1993 through 1997 and the period from 1998 through 2002, roughly

those illustrated in Table 3. The flow of containers through the ports during these two periods was remarkably different. In 1995, the ports processed roughly 5.4 million TEUs while in 2000, this figure had increased by 75 percent to 9.5 million TEUs. As there was very little in the way of expansion of infrastructure during this period, it is quite likely that congestion and pollution resulting from port activities more than doubled. Our analysis will therefore break up the period into two epochs and look for a significant difference in rates of establishment growth inside and outside of the hotspots. By identifying zip codes that are most likely to be affected and breaking the period in two, we are reasonably confident that we are able to identify the effects of increased container movements through the ports.

Net establishment creation in a zip code is calculated by simply counting firm births from one year to the next in the NETS database and subtracting a count of firm deaths.[6] As zip codes are of varying sizes, we normalize this count by overall employment in the zip code. More commonly, this normalization is undertaken to reflect the fact that, in principle, each employee is a potential founder of a new establishment (Audretsch and Fritsch, 1999). Although it is possible that some employees could found more than one establishment, this seems unlikely in a single year. The dependent variable is therefore bounded between zero and one. This reasoning is somewhat more intuitive for analyzing regions larger than a single zip code. However, the need to scale the dependent variable by some measure of zip code size leads us to the same ratio to be explained: net establishment creation per 1000 employees in the region. In addition, the annual growth of establishments is averaged over the 5 year period. This averaging is employed to smooth out errors in the identification of firm births and deaths as they are reported in the NETS database.

Our econometric strategy is fundamentally to employ a difference in difference estimator. That is, we employ a methodology that takes into consideration the fact that establishment growth rates may be fundamentally different between zip codes inside and outside of hotspots. The approach allows this difference to be present in both epochs and examines the extent to which the effect is larger in the second

[6] Establishments that move out of the zip code are included as deaths, though they have not strictly been eliminated. Similarly, establishments that relocate into the zip code from some other region are included in counts of births.

period than it was in the first. As the criterion for location decisions likely vary across zip codes, as was suggested in Table 3, our dependent variable is establishment growth within a zip code measured separately for each 3-digit NAICS industry.

In selecting our regressors, variables or characteristics that are a part of the criteria for locating an establishment, we allow for three sets of factors that could differentially affect establishment growth across zip codes.[7] First, national trends by industry will likely affect both establishment births and deaths. To the extent that the industrial composition of zip codes varies in Los Angeles County, such national trends could differentially affect overall zip code births and deaths and should be controlled for. Accordingly, we include the growth rate of employment by 3-digit NAICS industry during the epoch (1993-1997 and 1998-2002), the same level as the dependent variable.

Second, the industrial structure of zip codes does vary, so regressors are included to account for this difference. In particular, we include variables that measure the industrial diversity of a zip code as well as the contribution of the specific 3-digit NAICS industry to employment and establishments in the zip code. These variables reflect externalities that can make particular zip codes more or less attractive to establishments within each industry. The diversity of the zip code indicates that extent to which employment outside of the industry is diverse. All things equal, establishment owners prefer that a region have a diverse set of industries present. This variable is calculated as a Herfindahl Index, or the sum of the squared shares of zip code employment in each 3-digit NAICS industry not including the establishments own industry. The own industry employment and establishment variables are designed to capture agglomeration effects. It is expected that a greater concentration of employment and number of establishments in a zip code will lead to greater net establishment growth.

Third, it is common in the literature to include indicators of the qualities or characteristics of the various regions under analysis. Here, we include a variety of zip code specific variables. The list is

[7] See Goetz, 1997, Henderson, 1997, Moses and Williamson, 1967, and Newman, 2004, for more on the choice of independent variables in similar analyses.

presented in Table 1 and includes characteristics such as percent white, median household income, and the unemployment rate.

Results

A first set of regression results is presented in Table 4.[89] The table separately presents results for Net Establishment Growth, Births, and Deaths in each of the two epochs. The first 6 columns present results for net establishment growth, with three different specifications for each time period. The first period is an average over the years 1993 through 1997 and the second period covers the years 1998 through 2002. During both of these periods, the flow of goods through the San Pedro ports was expanding rapidly, however, the significantly higher overall level during the latter period suggests the potential for a more significant impact on establishment growth during this period. The absolute number of containers is the driver behind the congestion and pollution externalities that are suggested as deleterious to net establishment growth. The absolute number and the absolute increase in the number of containers during the latter period far outstripped the numbers in the earlier period. Therefore, it is expected that the coefficient on the hotspot dummy will be negative and larger in absolute value in the latter period than in the earlier period.

The three different regressions indicate the prosperity, as measured by net establishment growth, of the hotspot zip codes relative to other Los Angeles County zip codes. The first specification merely indicates the observed differential in establishment growth rates between the two regions (in and out of the hotspots), or the difference in mean establishment growth rates across industries (columns 1 and 4). In the earlier period, there was no discernable difference in the pattern of establishment growth. This is peculiar given the statistics presented in Table 3. However, as suggested in Table 3, net establishment growth is reported as significantly slower in hotspot zip codes than out. This is reflected in the

[8] Results by major 2-digit NAICS industry are available in an Appendix.
[9] See O'Keefe, 2004, for a similar analysis of California's enterprise zones. Though her analysis reduces the size of the control group through propensity score matching, we have found that the qualitative nature of our results is similar to that presented here with a control group selected through propensity score matching.

significantly negative coefficient on the "hotspot" variable in column 4. These results are merely suggestive and provide an indication that our calculated establishment growth rates do conform to the data.

Columns 2 and 5 present results from another simple specification, one that addresses only the hypothesis that, nationwide, industries located in the hotspot zip codes were in decline relative to industries located in the rest of the county. This specification includes growth in employment in the 3-digit NAICS industry nationwide (NAICSCHG3). In both periods, this growth is highly correlated with net establishment growth both in and out of the hotspots: employment growth nationwide is a significant determinant of establishment growth in a zip code. Curiously, this effect is stronger in the latter period than in the earlier period. This is perhaps due to the nature of the early 1990s recession, which hit southern California harder than much of the rest of the nation.

If indeed national employment trends were felt disproportionately in hotspot zip codes, we would expect the coefficient on hotspot to increase relative to that reported in columns 1 and 4. Indeed, we do, but the effect is very small, suggesting that there are other forces at work. There is little change in the hotspot coefficient between columns 1 and 2 or 4 and 5, indicating that national employment trends were unimportant for explaining the difference in net establishment growth.

A final specification including the full set of regressors is presented in columns 3 and 6, for the earlier and latter periods, respectively. Once zip code characteristics are included, both those that are industry-specific and those that are more general, hotspot zip codes are revealed to have been more inherently desirable in the earlier period than in the latter. The hotspot coefficient in column 3 is very significant and positive. However, the coefficient in column 6, reflecting the experience of the latter period, is now statistically indistinguishable from zero. Note that this does not rule out our hypothesis, that significantly greater container flows through the ports disadvantage nearby communities. Rather than putting these communities at a disadvantage relative to other communities, it appears to have eroded the extent to which they were more attractive in the earlier period so as to put the two regions on a level playing ground.

This finding can be further explained by turning to the final four columns of Table 3. These columns present results for establishment births and deaths. Where the first 6 columns of this table were produced using ordinary least squares regressions, the births and deaths columns have been produced using a Tobit specification, one that accounts for the fact that the dependent variable is truncated at zero.

Columns 7 and 8 present results for establishment births. These results suggest that there was no difference between establishment birth rates in and out of the hotspots in either the early or the latter period. With respect to deaths, however, columns 9 and 10 suggest that in the early period, the death rate in hotspot zip codes was significantly lower than elsewhere in the county. This relationship was significantly diminished in the latter period as the hotspot coefficient in column 10 is still negative, but but much smaller than the coefficient in column 9, and not significantly different from zero.

While these results are valuable, providing insights into establishment dynamics in the two periods separately, we now turn to a "difference in difference" approach. This approach builds on that presented in Table 4 in three important ways. First, the observations for the two periods are included in a single regression. Second, zip code fixed effects are included in the specification. This accounts for the first "difference", allowing the base rate of establishment creation to differ across zip codes. While fixed effects could have been included in the previous specification, their inclusion completely washes out the effect of the dummy variable HOTSPOT. While this observation is informative, it is not determinative. If indeed there is no difference in base establishment growth rates in hotspot zip codes relative to other zip codes in the county in either period, we would find a similarly insignificant coefficient using the difference in difference approach as well.

Table 5 presents a set of eight results using the difference in difference approach. These include a specification including all industries, five sets of results for individual industries, and two more specifications, one each explaining births and deaths, respectively. Column 1 presents the results of primary interest. Note the addition of the PERIOD variable. This is simply a dummy variable that takes the value of 0 in the early period and 1 in the latter period. As expected, it is positive and highly significant. The charts in Figure 3 strongly suggested that this would be the case. The hotspot variable in

this specification, HOTSPOT_P, differs from that included in the Table 4 specifications in that it is equal to 1 only in the latter period for zip codes the centroid of which lies within a hotspot. By restricting this variable to only be active in the second period, the specification implements the second difference. That is, the zip code fixed effects control for differences in the fundamental base rate of establishment growth across zip codes and HOTSPOT_P then picks up any difference in the hotspot base growth rates across years, relative to changes in the hon-hotspot base growth rates, which is captured by the inclusion of the variable PERIOD.

Our finding, from column 1 of Table 5, is that zip codes in hotspots were significantly disadvantaged relative to other zip codes in Los Angeles County when it comes to net establishment growth. This is indicated by the negative coefficient on HOTSPOT_P. Columns 7 and 8 provide additional insight into this finding by revealing that this effect is driven both by lower birth rates, though the coefficient is not quite significant at conventional levels, and by higher death rates. The rest of the county also experienced birth rates in the latter period that were lower than might be expected. Given changes in national employment trends and other controls included in the specification, birth rates were lower than would have been the case in the earlier period had these same characteristics held. However, establishment death rates outside of the hotspots were lower, conditional on zip code characteristics and national employment trends, than was the case in the early 1990s.

These results generally hold for specific industries as well. With the exception of Agriculture, Mining, and Construction, each of the broad industry groups fared better countywide in the latter period, as indicated by positive and significant coefficients on the PERIOD variable. Of these, only the Transportation Services sector does not have a negative and significant coefficient on HOTSPOT_P, indicating that there was apparently no significant effect of port activity on the desirability of locating near the ports or intermodal rail facilities in this sector. This finding is reassuring. It is precisely this sector that should benefit from increased goods movement through the ports. Though we can not say that it in fact benefits in the hotspot zip codes, it fares no worse than it does throughout the rest of the county.

6. Conclusions

This paper explores the impact of increased port activity on net establishment creation in areas proximate to the ports and to rail facilities that service the ports. Though it is not possible to test it directly, the central hypothesis explored is that negative externalities, largely from trucks hauling containers, in the form of congestion on local highways and city streets and pollution derived from these same trucks, trains, ships, and cargo handling equipment at the ports and rail facilities, reduces the desirability of locating an establishment in these "hotspots".

This hypothesis is tested by looking for changes in the rates of establishment creation in hotspots relative to the rest of Los Angeles County. In particular, the hypothesis suggests that establishment growth in these areas should decline as port activity increases. Compelling evidence was found for this hypothesis both over all industries and for specific industry groupings. The lone exception is for the Transportation Services sector, which experienced changes in establishment growth rates that were similar both in and out of the hotspots. Other sectors, given national employment trends and the demographics of particular zip codes, experienced establishment growth that was significantly slower in the latter part of the 1990s and early twenty first century than it was in the early 1990s.

This finding indicates that the economic prospects of zip codes near the ports and intermodal facilities declined relative to the rest of the county in the last part of the 1990s. Although we are inclined to attribute this effect to the negative externalities of congestion and pollution that arise from port acitivy, there are other potential explanations for this finding. In particular, there are other aspects of goods movement that could explain this result. Changes in land use as a result of increased port activity could be crowding out establishments in unrelated sectors. For instance, the development of warehousing and distribution facilities occurred during this period. Such facilities sometimes occupy enormous tracts of land. In the process, it is possible that they have displaced significant numbers of smaller establishments. It is also the case that the construction of the Alameda Corridor roughly corresponds to the latter time period. Construction began in 1997 and was completed in late 2002. As the corridor merely begins and

ends inside of a hotspot, impacting a small subset of the hotspot zip codes, and travels through several zip codes outside of the hotspots, this is an unlikely explanation. In the end, we are left with the conclusion that growth at the ports imposes a significant toll on the economic prospects of surrounding communities.

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Figure 1: LA Zip Code Centroids

Figure4: The Geography of Hotspot Zip Codes

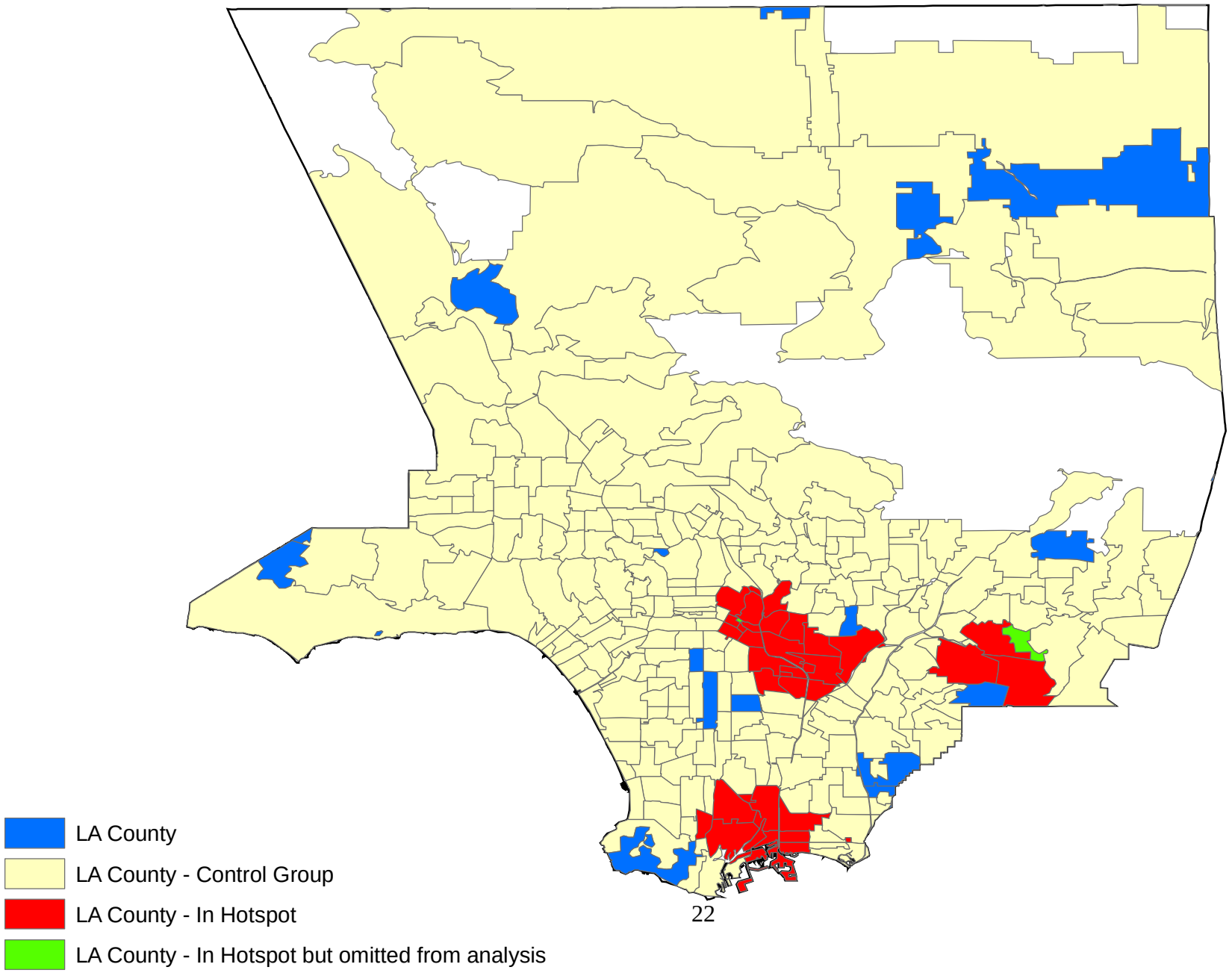

Figure 3

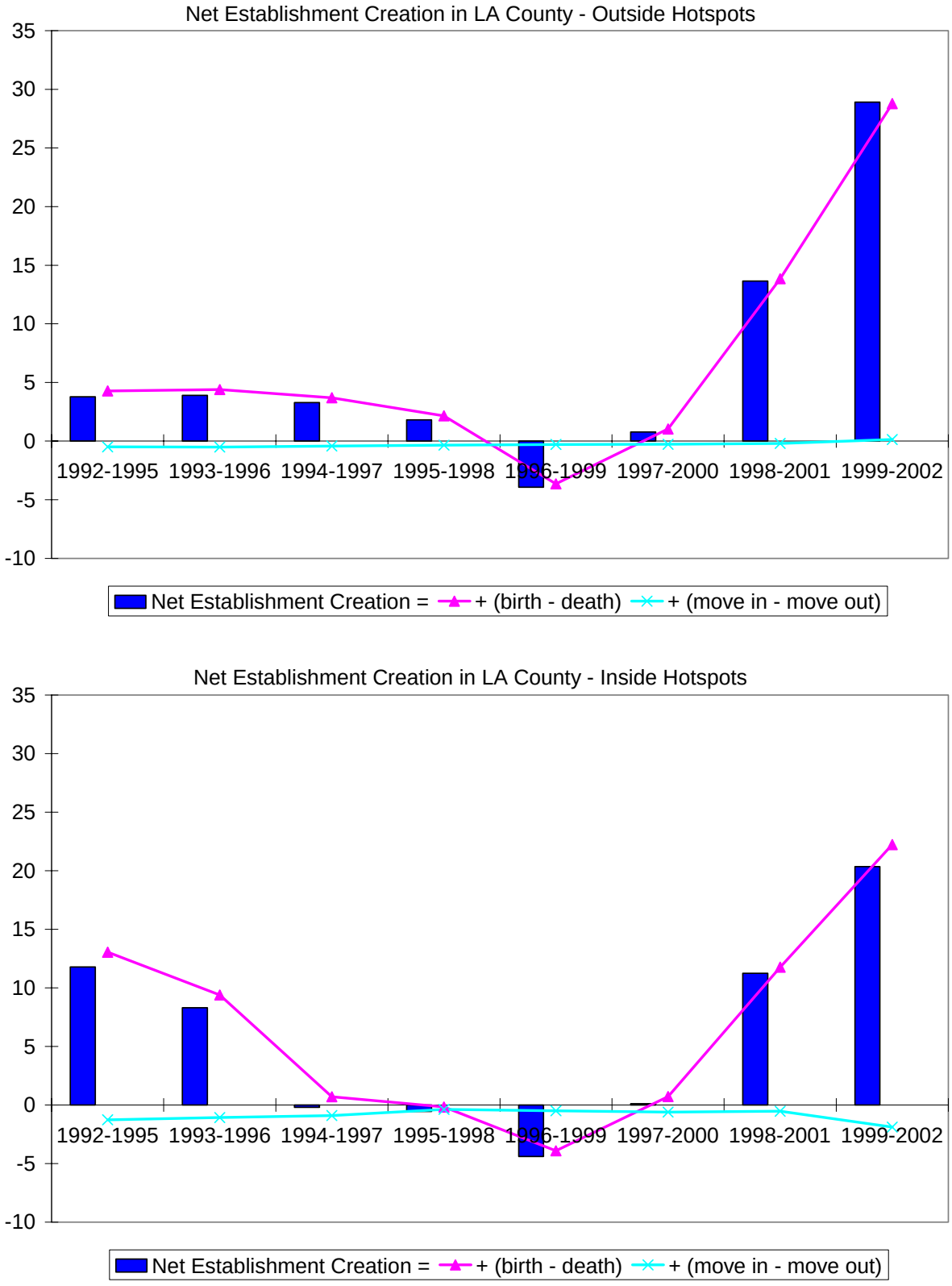
Net Establishment Creation in LA County - Outside Hotspots
35
30
25
20
15
10
5
0
-5
-10
1992-1995
1993-1996
1994-1997
1995-1998
1996-1999
1997-2000
1998-2001
1999-2002
Net Establishment Creation =
+ (birth - death)
+ (move in - move out)
Net Establishment Creation in LA County - Inside Hotspots
35
30
25
20
15
10
5
0
-5
-10
1992-1995
1993-1996
1994-1997
1995-1998
1996-1999
1997-2000
1998-2001
1999-2002
Net Establishment Creation =
+ (birth - death)
+ (move in - move out)

Table 4

Impact of Hotspot Location on Net Establishment Growth, Births, and Deaths

	Net Establishment Growth (NETESTGRW)						Births		Deaths	
	1993 - 1997			1998-2002			1993 - 1997	1998-2002	1993 - 1997	1998-2002
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
HOTSPOT	0.000	0.001	0.013	-0.039	-0.037	0.000	-0.010	-0.008	-0.021	-0.006
	(0.08)	*(0.21)*	*(2.89)***	*(7.59)***	*(7.24)***	*(0.06)*	(1.78)	(1.22)	(4.95)**	(1.61)
Industry Specific										
NAICSCHG3		0.121	0.099		0.399	0.247	0.054	0.464	-0.062	0.154
		*(12.43)***	*(10.32)***		*(26.80)***	*(17.98)***	(4.30)**	(26.62)**	(6.76)**	(16.70)**
Industry/Zip Code										
DIVERS			0.056			0.063	0.029	0.170	-0.005	0.080
			*(2.29)**			*(2.08)**	(0.96)	(4.46)**	(0.24)	(3.99)**
EMPCONC			-0.067			-0.068	-0.175	-0.167	-0.102	-0.143
			*(3.19)***			*(2.49)**	(7.48)**	(4.85)**	(5.58)**	(7.89)**
NZIPEST			0.011			0.027	0.146	0.141	0.133	0.113
			*(22.30)***			*(53.64)***	(248.65)**	(224.68)**	(286.24)**	(345.63)**
Zip Code Specific										
MEDHHINC			-0.003			0.012	-0.001	0.015	0.003	0.002
			*(2.15)**			*(11.01)***	(0.33)	(10.45)**	(2.50)*	(2.40)*
ESTSIZE			0.000			0.000	-0.000	-0.000	0.000	-0.000
			(1.17)			*(0.13)*	(1.41)	(1.76)	(0.61)	(0.91)
PCWHITE			-0.027			-0.031	-0.072	-0.067	-0.035	-0.030
			*(3.23)***			*(3.17)***	(6.71)**	(5.35)**	(4.41)**	(4.61)**
POPWORK			-0.680			-0.219	1.020	1.119	1.217	1.106
			*(5.10)***			*(1.45)*	(5.92)**	(5.86)**	(9.78)**	(11.18)**
RESIDENT			0.003			0.004	-0.009	-0.001	-0.010	-0.004
			*(3.49)***			*(4.44)***	(9.46)**	(0.94)	(14.31)**	(6.49)**
UNEMP			-0.231			0.067	-0.111	0.123	0.143	0.051
			*(3.70)***			*(1.60)*	(1.44)	(2.32)*	(2.42)*	(1.84)
Constant	0.025	-0.102	-0.049	0.068	-0.367	-0.309	-0.005	-0.580	0.053	-0.185
	*(17.81)***	*(9.92)***	*(3.15)***	*(38.31)***	*(22.48)***	*(17.01)***	(0.24)	(25.08)**	(3.55)**	(15.22)**
Observations	16228	16228	16228	16228	16228	16228	16228	16228	16228	16228
R-squared	0.00	0.01	0.05	0.00	0.05	0.22				

Absolute value of t-statistics in parentheses

* significant at 5% level; ** significant at 1% level

Table 5
Impact of Hotspot Location on Net Establishment Growth, Births, and Deaths
A Difference in Difference Approach

	Net Employment Change – By Industry						Births	Deaths
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	All Industries	Agric, Min., & Const	Manuf	W&R Trade	Trans. Services	Other Services	All Industries	All Industries
HOTSPOT_P	-0.031	-0.019	-0.008	-0.041	-0.007	-0.040	-0.012	0.010
	*(4.89)***	*(1.06)*	*(2.42)**	*(3.63)***	*(0.97)*	*(3.07)***	*(1.51)*	*(2.40)**
PERIOD	0.025	0.004	0.013	0.043	0.030	0.021	-0.017	-0.012
	*(5.51)***	*(0.27)*	*(4.94)***	*(5.23)***	*(4.83)***	*(2.35)**	*(2.91)***	*(4.20)***
Industry Specific								
NAICSCHG3	0.162	0.143	0.016	0.379	-0.010	0.159	0.208	-0.010
	*(20.25)***	*(5.24)***	*(2.62)***	*(11.91)***	*(1.07)*	*(10.46)***	*(20.72)***	*(1.99)**
Industry/Zip Code								
DIVERS	0.262	-0.055	-0.008	0.378	0.299	0.389	0.234	-0.057
	*(5.71)***	*(0.34)*	*(0.29)*	*(4.50)***	*(3.89)***	*(4.37)***	*(4.06)***	*(2.00)**
EMPCONC	-0.018	-0.156	-0.029	0.164	-0.023	-0.030	-0.113	-0.153
	(0.85)	*(1.42)*	*(2.25)**	*(3.04)***	*(0.32)*	*(0.68)*	*(4.24)***	*(11.52)***
NZIPEST	0.021	-0.004	-0.015	-0.006	0.013	0.025	0.145	0.077
	*(58.28)***	*(2.95)***	*(16.89)***	*(7.21)***	*(6.15)***	*(45.20)***	*(328.20)***	*(343.08)***
Zip Code Specific								
MEDHHINC	0.016	-0.010	-0.009	-0.010	-0.010	0.047	0.019	-0.007
	*(4.74)***	*(1.17)*	*(4.88)***	*(1.74)*	*(2.18)**	*(7.26)***	*(4.56)***	*(3.61)***
ESTSIZE	0.000	0.002	0.000	0.000	0.001	0.000	-0.000	-0.000
	(1.19)	*(0.79)*	*(0.75)*	*(0.94)*	*(1.69)*	*(0.15)*	*(0.15)*	*(0.51)*
PCWHITE	0.036	-0.138	0.008	0.116	0.020	0.045	0.018	-0.029
	(1.50)	*(2.05)**	*(0.66)*	*(2.81)***	*(0.68)*	*(0.94)*	*(0.61)*	*(1.94)*
POPWORK	-5.277	-5.268	-1.279	-6.739	-2.203	-7.341	0.841	-1.454
	*(9.32)***	*(3.55)***	*(3.97)***	*(6.79)***	*(2.94)***	*(6.55)***	*(1.19)*	*(4.12)***
RESIDENT	0.021	0.002	0.001	0.037	0.033	0.030	-0.013	-0.019
	*(6.03)***	*(0.18)*	*(0.53)*	*(6.08)***	*(6.50)***	*(4.49)***	*(2.92)***	*(8.69)***
UNEMP	0.136	0.291	-0.007	-0.096	0.070	0.294	0.014	-0.074
	(1.77)	*(1.35)*	*(0.17)*	*(0.70)*	*(0.72)*	*(1.89)*	*(0.15)*	*(1.55)*
Zip Fixed	X	X	X	X	X	X	X	X
Constant	-0.183	0.013	0.039	-0.323	-0.100	-0.248	-0.224	0.182
	*(5.72)***	*(0.14)*	*(2.21)**	*(5.09)***	*(2.37)**	*(3.78)***	*(5.62)***	*(9.13)***
Observations	32456	2646	7218	6924	2228	13440	32456	32456
R-squared	0.18	0.15	0.16	0.14	0.22	0.26		

Absolute value of t-statistics in parentheses
* significant at 5% level; ** significant at 1% level

Appendix

The tables presented in this Appendix replicate the results presented in columns 3, 5, and 7-10 of Table 4 and provide additional results for detailed industries. Column numbers in the tables correspond to the following categories:

```
(1) All Industries
(2) Agriculture, Mining, and Construction
(3) Manufacturing
(4) Wholesale and Retail Trade
(5) Transportation Services
(6) Other Services
```

Table A.1
Impact of Hotspot Location on Net Establishment Growth, Births, and Deaths
Detailed Results by Industry

	1993 - 1997						1998 - 2002					
	(1)	(2)	(3)	(4)	(5)	(6)	(1)	(2)	(3)	(4)	(5)	(6)
HOTSPOT	0.013	0.006	0.007	0.024	-0.009	0.018	0.000	-0.008	-0.003	-0.006	-0.002	0.009
	(2.89)**	(0.42)	(2.68)**	(2.46)*	(1.72)	(2.06)*	(0.06)	(0.50)	(1.23)	(0.71)	(0.24)	(0.84)
Industry Specific												
NAICSCHG3	0.099	0.077	0.018	0.671	-0.013	0.031	0.247	0.230	0.012	-0.165	0.035	0.423
	(10.32)**	(1.93)	(1.54)	(15.19)**	(1.57)	(1.84)	(17.98)**	(5.37)**	(1.61)	(3.39)**	(0.93)	(14.83)**
Industry/Zip Code												
DIVERS	0.056	0.112	0.015	0.001	-0.045	0.112	-0.068	-0.457	0.003	0.140	-0.112	-0.101
	(2.29)*	(1.32)	(0.97)	(0.01)	(1.22)	(2.36)*	(2.49)*	(2.53)*	(0.22)	(2.39)*	(1.73)	(1.97)*
EMPCONC	-0.067	0.039	-0.014	0.265	0.077	-0.101	0.063	-0.141	0.002	0.028	0.135	0.101
	(3.19)**	(0.33)	(1.23)	(4.05)**	(1.41)	(2.49)*	(2.08)*	(1.52)	(0.12)	(0.67)	(2.80)**	(1.66)
NZIPEST	0.011	-0.007	-0.018	-0.009	0.006	0.016	0.027	-0.003	-0.016	-0.003	0.020	0.031
	(22.30)**	(4.29)**	(14.54)**	(6.46)**	(2.32)*	(21.08)**	(53.64)**	(1.53)	(14.18)**	(2.52)*	(6.93)**	(40.63)**
Zip Code Specific												
MEDHHINC	-0.003	-0.001	0.002	-0.005	0.002	-0.005	0.012	0.003	0.000	0.002	-0.005	0.025
	(2.15)*	(0.25)	(2.06)*	(1.77)	(1.09)	(2.27)*	(11.01)**	(1.17)	(0.30)	(1.16)	(3.32)**	(11.37)**
ESTSIZE	-0.000	-0.001	0.000	-0.000	0.000	-0.000	-0.000	0.002	-0.000	-0.001	-0.000	-0.000
	(1.17)	(0.96)	(0.08)	(0.63)	(1.29)	(1.53)	(0.13)	(1.80)	(0.55)	(1.62)	(0.40)	(0.35)
PCWHITE	-0.027	-0.019	0.007	-0.033	-0.026	-0.031	-0.031	-0.000	-0.002	-0.032	0.045	-0.039
	(3.23)**	(0.77)	(1.34)	(1.88)	(2.44)*	(1.91)	(3.17)**	(0.01)	(0.41)	(2.25)*	(3.28)**	(1.95)
POPWORK	-0.680	-1.036	-0.387	-0.461	0.099	-1.359	-0.219	-0.489	0.102	-0.007	-0.328	-1.039
	(5.10)**	(2.79)**	(4.61)**	(1.64)	(0.56)	(5.26)**	(1.45)	(1.19)	(1.27)	(0.03)	(1.60)	(3.36)**
RESIDENT	0.003	0.003	0.003	-0.004	0.001	0.010	0.004	0.013	-0.000	0.005	0.009	0.011
	(3.49)**	(1.19)	(6.04)**	(2.62)**	(0.44)	(7.07)**	(4.44)**	(4.51)**	(0.85)	(4.00)**	(5.99)**	(6.16)**
UNEMP	-0.231	-0.015	0.037	-0.020	-0.032	-0.470	0.067	-0.043	0.015	0.161	0.000	0.119
	(3.70)**	(0.08)	(0.94)	(0.15)	(0.41)	(3.91)**	(1.60)	(0.35)	(0.68)	(2.57)*	(0.01)	(1.39)
Constant	-0.049	-0.044	-0.028	-0.638	0.029	0.059	-0.309	-0.266	-0.007	0.197	-0.052	-0.549
	(3.15)**	(0.82)	(2.02)*	(12.04)**	(1.54)	(2.01)*	(17.01)**	(4.74)**	(0.73)	(3.50)**	(1.17)	(14.25)**
Observations	16228	1323	3609	3462	1114	6720	16228	1323	3609	3462	1114	6720
R-squared	0.05	0.03	0.07	0.09	0.03	0.09	0.22	0.03	0.06	0.02	0.13	0.29

Absolute value of t-statistics in parentheses
* significant at 5% level; ** significant at 1% level

Absolute value of t-statistics in parentheses
* significant at 5% level; ** significant at 1% level

Table A.2
Impact of Hotspot Location on Establishment Births
Detailed Results by Industry

	1993 - 1997						1998 - 2002					
	(1)	(2)	(3)	(4)	(5)	(6)		(1)	(2)	(3)	(4)	(5)	(6)
HOTSPOT	-0.010	-0.010	0.002	0.005	-0.028	-0.015	HOTSPOT	-0.008	-0.018	0.001	-0.008	-0.008	-0.007
	(1.78)	(0.66)	(0.65)	(0.44)	(3.40)**	(1.31)		(1.22)	(0.96)	(0.30)	(0.86)	(1.00)	(0.48)
Industry Specific													
NAICSCHG3	0.054	0.204	-0.078	0.716	0.012	-0.087	NAICSCHG3	0.464	0.739	-0.045	0.348	0.106	0.756
	(4.30)**	(4.17)**	(4.91)**	(13.96)**	(0.90)	(3.92)**		(26.62)**	(13.38)**	(4.80)**	(5.92)**	(2.14)*	(20.87)**
Industry/Zip Code													
DIVERS	0.029	0.271	-0.032	-0.092	-0.122	0.108	DIVERS	0.170	0.081	0.030	0.139	0.084	0.234
	(0.96)	(2.74)**	(1.45)	(1.44)	(2.21)*	(1.79)		(4.46)**	(0.72)	(1.34)	(2.46)*	(1.44)	(3.00)**
EMPCONC	-0.175	1.117	-0.043	-0.042	0.122	-0.316	EMPCONC	-0.167	-0.136	-0.025	-0.131	-0.192	-0.318
	(7.48)**	(8.20)**	(2.97)**	(0.55)	(1.51)	(6.43)**		(4.85)**	(0.63)	(1.45)	(1.84)	(2.44)*	(4.82)**
NZIPEST	0.146	0.099	0.093	0.134	0.136	0.153	NZIPEST	0.141	0.095	0.092	0.116	0.163	0.146
	(248.65)**	(54.04)**	(82.56)**	(99.41)**	(51.28)**	(158.72)**		(224.68)**	(40.77)**	(64.15)**	(90.50)**	(47.67)**	(150.90)**
Zip Code Specific													
MEDHHINC	-0.001	-0.003	0.004	0.000	-0.000	-0.003	MEDHHINC	0.015	0.007	0.002	0.005	-0.005	0.027
	(0.33)	(0.87)	(3.29)**	(0.01)	(0.15)	(0.90)		(10.45)**	(2.16)*	(2.02)*	(2.38)*	(2.77)**	(9.60)**
ESTSIZE	-0.000	-0.002	-0.000	-0.000	0.001	-0.000	ESTSIZE	-0.000	0.001	-0.000	-0.001	0.000	-0.001
	(1.41)	(1.97)*	(0.60)	(0.73)	(1.54)	(1.35)		(1.76)	(0.38)	(1.15)	(1.94)	(0.17)	(1.66)
PCWHITE	-0.072	-0.080	-0.001	-0.080	-0.078	-0.073	PCWHITE	-0.067	-0.003	0.004	-0.088	0.017	-0.075
	(6.71)**	(2.72)**	(0.13)	(3.84)**	(4.94)**	(3.46)**		(5.35)**	(0.09)	(0.57)	(4.91)**	(1.01)	(2.91)**
POPWORK	1.020	0.538	0.135	1.440	0.693	0.731	POPWORK	1.119	1.140	0.480	1.357	0.313	0.386
	(5.92)**	(1.23)	(1.21)	(4.29)**	(2.63)**	(2.17)*		(5.86)**	(2.27)*	(4.64)**	(5.10)**	(1.26)	(0.98)
RESIDENT	-0.009	-0.006	-0.002	-0.009	-0.004	-0.007	RESIDENT	-0.001	0.012	-0.001	0.005	0.007	0.002
	(9.46)**	(2.04)*	(3.03)**	(4.79)**	(2.21)*	(3.78)**		(0.94)	(3.59)**	(1.74)	(2.91)**	(4.05)**	(0.66)
UNEMP	-0.111	-0.054	0.120	-0.114	-0.071	-0.156	UNEMP	0.123	-0.034	0.061	0.014	-0.004	0.258
	(1.44)	(0.25)	(2.34)*	(0.79)	(0.60)	(0.99)		(2.32)*	(0.23)	(2.17)*	(0.18)	(0.06)	(2.36)*
Constant	-0.005	-0.173	0.063	-0.652	0.044	0.162	Constant	-0.580	-0.897	0.020	-0.339	-0.134	-0.967
	(0.24)	(2.68)**	(3.43)**	(10.20)**	(1.54)	(4.21)**		(25.08)**	(12.38)**	(1.72)	(4.97)**	(2.30)*	(19.66)**
Observations	16228	1323	3609	3462	1114	6720	Observations	16228	1323	3609	3462	1114	6720

Absolute value of t-statistics in parentheses
* significant at 5% level; ** significant at 1% level

Absolute value of t-statistics in parentheses
* significant at 5% level; ** significant at 1% level

Table A.3
Impact of Hotspot Location on Establishment Deaths
Detailed Results by Industry

	1993 - 1997						1998 - 2002					
	(1)	(2)	(3)	(4)	(5)	(6)	(1)	(2)	(3)	(4)	(5)	(6)
HOTSPOT	-0.021	-0.020	-0.003	-0.015	-0.013	-0.032	-0.006	-0.006	0.004	-0.007	-0.007	-0.007
	(4.95)**	(1.29)	(0.93)	(1.90)	(2.58)**	(3.71)**	(1.61)	(0.41)	(1.69)	(1.00)	(1.32)	(1.09)
Industry Specific												
NAICSCHG3	-0.062	0.084	-0.104	0.018	0.026	-0.140	0.154	0.365	-0.056	0.517	0.049	0.286
	(6.76)**	(1.75)	(7.44)**	(0.48)	(3.22)**	(8.49)**	(16.70)**	(8.55)**	(7.59)**	(12.35)**	(1.63)	(16.11)**
Industry/Zip Code												
DIVERS	-0.005	0.173	-0.041	-0.077	-0.016	0.018	0.080	0.223	0.028	0.065	-0.060	0.123
	(0.24)	(1.80)	(2.44)*	(1.80)	(0.49)	(0.39)	(3.99)**	(2.49)*	(1.76)	(1.78)	(2.09)*	(3.23)**
EMPCONC	-0.102	1.006	-0.020	-0.311	0.030	-0.199	-0.143	0.316	-0.029	-0.267	-0.056	-0.238
	(5.58)**	(7.60)**	(1.61)	(5.70)**	(0.61)	(5.03)**	(7.89)**	(1.83)	(2.21)*	(5.38)**	(1.10)	(7.35)**
NZIPEST	0.133	0.109	0.100	0.136	0.119	0.136	0.113	0.100	0.107	0.119	0.141	0.114
	(286.24)**	(61.30)**	(84.73)**	(119.84)**	(53.65)**	(189.31)**	(345.63)**	(53.26)**	(105.87)**	(141.37)**	(69.40)**	(240.42)**
Zip Code Specific												
MEDHHINC	0.003	-0.002	0.002	0.005	-0.002	0.004	0.002	0.002	0.002	0.003	0.001	0.000
	(2.50)*	(0.57)	(1.58)	(2.49)*	(1.27)	(1.74)	(2.40)*	(0.78)	(2.58)**	(2.21)*	(0.96)	(0.16)
ESTSIZE	0.000	-0.001	0.000	0.000	0.000	0.000	-0.000	-0.002	-0.000	0.000	0.000	-0.000
	(0.61)	(1.37)	(0.45)	(0.55)	(0.42)	(0.48)	(0.91)	(1.90)	(0.52)	(0.48)	(0.21)	(0.85)
PCWHITE	-0.035	-0.048	-0.008	-0.031	-0.052	-0.028	-0.030	-0.008	0.007	-0.048	-0.039	-0.024
	(4.41)**	(1.66)	(1.29)	(2.12)*	(5.37)**	(1.79)	(4.61)**	(0.30)	(1.27)	(3.91)**	(3.96)**	(1.93)
POPWORK	1.217	1.057	0.397	1.183	-0.017	1.501	1.106	1.494	0.243	1.321	0.586	1.348
	(9.78)**	(2.48)*	(4.11)**	(5.05)**	(0.11)	(5.96)**	(11.18)**	(3.73)**	(2.97)**	(7.13)**	(3.85)**	(6.92)**
RESIDENT	-0.010	-0.010	-0.004	-0.002	-0.001	-0.016	-0.004	-0.002	0.000	0.001	-0.003	-0.008
	(14.31)**	(3.78)**	(6.58)**	(1.23)	(1.28)	(11.18)**	(6.49)**	(0.74)	(0.06)	(0.74)	(2.39)*	(7.31)**
UNEMP	0.143	0.148	0.047	-0.039	-0.078	0.347	0.051	0.027	0.050	-0.123	0.013	0.108
	(2.42)*	(0.71)	(1.05)	(0.35)	(1.10)	(2.96)**	(1.84)	(0.23)	(2.31)*	(2.31)*	(0.33)	(2.02)*
Constant	0.053	-0.104	0.101	0.008	0.022	0.109	-0.185	-0.439	0.028	-0.557	-0.046	-0.354
	(3.55)**	(1.66)	(6.24)**	(0.18)	(1.26)	(3.83)**	(15.22)**	(7.81)**	(3.16)**	(11.55)**	(1.31)	(14.65)**
Observations	16228	1323	3609	3462	1114	6720	16228	1323	3609	3462	1114	6720

Absolute value of t-statistics in parentheses
* significant at 5% level; ** significant at 1% level

Absolute value of t-statistics in parentheses
* significant at 5% level; ** significant at 1% level