Does Organizational Form Drive Competition? Evidence from Coffee Retailing

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Abstract

Independent and chain coffee shops offer similar products, but differ in their organizational form and branding. We examine the entry and exit patterns of 4,768 coffee retailers in Melbourne between 1991 and 2010. Panel logit regressions indicate that chain stores have no discernible effect on the exit or entry decisions of independent stores. However, chains and independents do increase the probability of exit for neighbouring stores of their own type. These findings imply that independents and chains operate almost as though they are in separate markets.

1 Introduction

Location, quality differences, and matching to specific tastes can all be sources of product differentiation (Hotelling, 1929; Tirole, 1988). Some markets also feature competition between branded and independent outlets. This competition, often leading to the displacement of independents, has been of intense interest (e.g. Basker, 2007; Jia, 2008; Haltiwanger et al. 2010). Some chains differentiate themselves by combining the services of many types of independent outlets. But in other situations, chains and independents offer similar sets of products. Instead, chains like McDonald's or Starbucks offer more nebulous concepts such as brand, reputation, and consistency of service. If organizational form is itself a source of product differentiation, then competition between independents and chains may be less direct and bring different consequences.

In this paper we investigate whether chains exert competitive pressure on independents using the example of Melbourne's coffee market. Our unique

dataset comprises entry and exit decisions by 4,347 independent retailers and 421 chain stores between 1991 and 2010. The Melbourne coffee retail market presents an appealing case study to analyze competition between chains and independents for several reasons. First, location is an important dimension of competition, and rich geographic location data is available. Second, coffee is a culturally important product, which is evidenced by the protests and hostility from local residents when chains such as Starbucks attempt to enter their community (Clark, 2008). Third, the beginning of our sample predates the mass entry of coffee chains into Melbourne so there is variation in the number and existence of chains. Fourth, there is less heterogeneity in output for coffee retailers and cafes (food, coffee, and other beverages) than for large retailers like Wal-mart, which sell a very wide variety of products. This allows coffee retailing to have a more precise industry definition.

Our rich panel data of entry and exit allows us to account for unobservable market characteristics. Markets with favorable characteristics can profitably sustain more stores. Market characteristics, including unobservable characteristics, will thus be correlated with the number of competitors. Regressions that omit these characteristics underestimate how much competition drives shops to exit or not enter a market. We address this bias, in part, by including geographic market fixed effects, which is possible given our long panel. Coffee shops and cafes are partitioned into 300 local markets, based on census regions, including separate markets for 11 large suburban shopping centres.[1] Fixed effects allow us to control for time-invariant sources of variation in markets for which we observe at least one instance of exit.

[1]To address the possibility that the census regions are too large such that branded and independents locations are geographically segregated, we also measure a coffee shop's set of competitors based on distance bands of 100 meters and 1000 meters.

Baseline estimates indicate that chain coffee retailers do not drive existing independent cafes out of the market. Each additional chain store in a neighborhood market is associated with an increase in the annual exit probability of an independent retailer by a statistically (and economically) insignificant average of 0.05 percentage points. However, each independent retailer is associated with an increase in the exit probability of competing independent retailers by an average of 0.6 percentage points and each chain outlet is associated with an increase in the exit probability of other chain outlets in its market by 2.2 percentage points. We also find that the presence of chains deters entry of additional chain outlets more than it deters entry of independents. For each additional chain store, the probability of entry by a new independent cafe decreases by 1.5 percentage points, but the probability of entry by additional chain stores decreases by 7.0 percentage points.

These results reveal that independents and chains operate in different market segments. In antitrust analysis, economists often look to demand-side substitution between products to determine market definition, i.e. what firms are direct competitors in a market. Our results here suggest that demand-side substitution is contingent on type (branded versus independent), despite the seeming similarity in products sold.

Our main findings contrast with conclusions from the literature that studies the impact of big-box retailers on independent stores in the discount retailing market (e.g. Jia, 2008; Paruchuri et al., 2009; Haltiwanger et al. 2010; and Ficano, 2013). These papers reveal that the expansion of multi-store retailers, especially Walmart, has displaced smaller independent stores. We find that coffee shops are unlike discount retail, for chains have a very limited effect on independent coffee shops, possibly because information about quality (coffee taste, ambiance etc.) and consumer preferences are much more important

than they are in discount retailing. Our results are more similar to findings from Japanese supermarkets, where large entrants drive out large incumbents rather than small incumbents (Igami, 2011), or American retail depository institutions, where competition between large and small banks is limited (Cohen and Mazzeo, 2007).

Our results are also of interest to local businesses that might lobby for zoning regulations to protect them from chain store entry, since we find that chain store entry has a negligible effect on the growth of independent outlets.[2] Additionally, our analysis is an example of how to make inferences about the nature of market segmentation without detailed price and quantity data. Here, we are able to identify whether chains and independents are direct competitors using panel data on entry and exit only. This is of practical significance for antitrust authorities that are charged with identifying relevant markets when confidential price and quantity data are unavailable.

The remainder of this article is structured as follows. In the next section we describe the Greater Melbourne market for coffee and our data. In Section 3 we present our baseline specification of entry and exit and discuss identification. Section 4 presents our results, and a final section concludes.

2 Data

Australia has a mature coffee industry and culture[3], and industry sales now exceed $4 billion (Jellie, 2007; Gargano, 2014).[4] In Greater Melbourne, annual

[2]Sadun (2015) finds similar regulations in the United Kingdom actually harmed independents because entry barriers gave large retailers an incentive to create smaller, more centrally-located stores that competed more effectively with local businesses.

[3]See Patterson, Scott, and Uncles (2010) for a history of coffee retailing in Australia.

[4]All amounts are in nominal Australian dollars. In 2010 the AUD/USD exchange rate was 0.92.

editions of the Yellow and White pages identify 4,768 cafes and coffee shops operating between 1991 and 2010.[5] We record the name and location for all firms listing themselves as either a "Cafe" or "Coffee shop."[6] We match entries across years, accounting for variations in how they display their name and address.[7]

Several chains operate in Greater Melbourne. The most prominent are Gloria Jean's Coffee (a total of 79 stores across the sample time frame), McCafe (housed in 118 McDonald's stores), Hudson's Coffee (30 stores), The Coffee Club (22 stores), and Starbuck's Coffee (25 stores). The first chain to enter was Brunetti in 1985. By 1991 there were seven chain locations (one BB's Cafe, two Bonbons Bakeries, one Brunetti, and three Muffin Breaks). Starbucks expanded into Australia in 2000 but closed most of its stores by 2008, including 17 of its then 22 Melbourne stores. Thus, our sample includes substantial variation in competition from chains.

We exclude restaurants and takeaway food services that do not primarily compete in the market for coffee. For 2014-15, coffee sales contributed 51

[5]Our data likely underestimate the extent of independent entry because Yellow Pages listings are voluntary. Nevertheless, this bias is likely to be small as a basic listing in the Yellow Pages is free.

[6]We supplement Yellow Pages listing with White Pages listings for chains. In Australia, McCafes are often housed in a McDonald's restaurant but have separate counters and menus focusing on barista-prepared espresso-based coffee drinks and pastries. These features make it akin to a coffee shop offering. We collected their entry years through correspondence with McDonald's.

[7]Business names often vary from year to year; for example, the "Apricot Tree Coffee Lounge" (2007–2010) is listed as "Apricot Tree Cafe" in 2008. To account for name changes or misspellings, we adopt the following rule: if a unique name is present in listings for two businesses in the same location in consecutive years, the listings are treated as the same firm. Therefore, "Errol's Pantry & Bakehouse" and "Errol's Cafe" are considered the same firm, whereas "Flynn's Cafe" and "Robin's Cafe" are considered different firms. Some establishments listed different addresses representing the same location, due to suburb name and street name changes or the use of varying address forms (for example, "Corner of Smith Street and Jones Avenue" in some years, "123 Jones Avenue" or "Alias Shopping Center" in others). We use street directories, Google Maps, and the continuity of telephone numbers to resolve these issues.

percent of the revenue generated by coffee shops and cafes, food (e.g. sandwiches, eggs and toast, cookies) contributed 27.5 percent, and other beverages (e.g. milkshakes, tea, hot chocolate) contributed the remaining 21.5 percent (Gargano, 2014, p. 13). Our data include information on both coffee shops and cafes. Both types serve coffee drinks but cafes also emphasize their food offerings. The major chains operating in Melbourne (e.g. Gloria Jeans, McCafe, and Muffin Break) are coffee shops. The overwhelming majority of independent retailers self-identify as cafes (Table 1).

Firm addresses are geocoded and assigned to local markets based on Statistical Area Level 2 (SA2) boundaries. SA2s are defined by the Australian Bureau of Statistics to "represent a community that interacts together socially and economically" and have populations ranging from 3,000 to 25,000 persons. SA2s were chosen as a market definition to incorporate demographic data between 1991 and 2010. In the Greater Melbourne area, there are 256 SA2s that ever had coffee shops between 1976 and 2010. They had an average population of 14,447 in 2011. We divide the single SA2 for Melbourne's Central Business District (CBD), which contains 12.1 percent of all coffee shops in our data, into 34 separate SA1s.[8] Eleven large suburban shopping centers that span more than 70,000 square meters are also considered separate markets.[9] Our final data set therefore contains 300 unique markets.

To account for changes in market characteristics, we incorporate data on household income, population, and employment. These data are drawn from

[8]SA1s are the smallest unit for which Census data is released, and generally have populations ranging from 200 to 800 persons.

[9]The shopping centers are: Chadstone Shopping Centre, Westfield Fountain Gate, Highpoint Shopping Centre, Westfield Knox, Westfield Southland, Westfield Doncaster, Watergardens Town Centre, Northland Shopping Centre, Bayside Shopping Centre, Werribee Plaza, and Eastland Shopping Centre.

five-year censuses from 1991, 1996, 2001, 2006, and 2011.[10] Weekly household income data is available in various ranges: \$1-39, \$40-79,..., \$2,000 or more. We combine these bands to construct two variables: the percentage of middle income households (earning between \$1,000 and \$2,000 per week), and the percentage of high income households (earning more than \$2,000 per week).

Our main analysis will use these neighborhood markets, but three sets of facts can be seen even in the aggregate store counts. First, the number of independents operating grew from 419 in 1991 to 1,794 in 2010. Figure 1 graphs the time series. Notably, the growth in the number of independents continues even after chains have spread. Far more independents than chains are operating in every year of the sample. Second, exit rates (the proportion of stores that exit in a given year) decline during our sample period. Between 1992 and 1999, annual exit rates fluctuate between 14.3 and 19.6 percent.[11] Between 2000 and 2009, exit rates fluctuate between 14.0 and 8.8 percent. Lower exit rates between 2000 and 2009 are driven by a decline in the exit rates of independent cafes. Between 1998 and 2009, the exit rate for independents declined from 20.6 to 10.1 percent. There are no discernible trends in exit rates for chains. Third, chain and independent stores have different location patterns. Melbourne's eleven largest suburban shopping centers house 81 of the area's 421 (19.2 percent) chain coffee retailers, but only 127 of 4,347 (2.9 percent) independent retailers (Table 1).

[10] For years between censuses, we interpolate linearly from the two closest censuses.

[11] The exit rate in 1991 is 28.6 percent, which coincides with a severe economic downturn in Australia. Between 1990 and 1991, the unemployment rate in Victoria increased from 7.4 to 10.4 percent.

3 Model and Estimation

3.1 Exit Regressions

We begin with panel logit regressions for the exit decision of each type. Exit in period t is observed when the shop is listed as open in the period t directory but is absent from the $t+1$ and all subsequent directories. Our baseline specification for estimating the probability that coffee retailer i of type j in market ℓ exits in period t is:

$$Pr(exit_{ij\ell t}) = \Lambda\left(\beta_{1j} n_{chains\ell t} + \beta_{2j} n_{inde\ell t} + \beta_{3j} X_{\ell t} + \beta_{4j} z_{it} + \xi_{j\ell} + \omega_t\right) \quad (1)$$

where $n_{j\ell t}$ is the number of competing stores of type $j \in \{chain, inde\}$ in market ℓ at the start of period t, $X_{\ell t}$ is a vector of market characteristics, z_{it} is the age of store i in time t, $\xi_{j\ell}$ is a (type-specific) market fixed effect, and ω_t is a year fixed effect. An observation is an incumbent store, and a location is a SA2, shopping centre, or downtown SA1. Equation 1 is estimated separately for each type.

This regression model assumes that each store has a separate exit decision. It does not include any coordination a chain makes in its closure decisions.[12] The model also assumes closure decisions are made at the beginning of each period. If, instead, the decision is influenced by competitors that opened or closed within the period, then competitor counts are measured with error. (Measurement error also arises if exit decisions are based on competition from previous periods, but take multiple years to implement, perhaps because of

[12]Most chains in Melbourne are franchised (see Table 1), although franchisees might operate multiple stores. In our data, a chain closes two stores in a market in the same year only three times. There are 13 instances of the same chain entering the same market twice in a year, and only one instance of the same chain opening three stores in a market in the same year.

long-term leases.)

Because firms choose their locations, desirable market characteristics are positively correlated with the number of competitors. This leads to a classic identification problem, arising from correlated effects (in the terminology of Manski (1993)). A naive regression with inadequate controls for market size or market characteristics would be biased. One or both of the estimates of β_{1j} and β_{2j} would be biased downward, so firms appear less likely to exit a location with more competitors.

The fundamental problem is a lack of exogenous variation in the number and types of coffee shop. Clever instrumental variables have been found in some similar settings (such as distances to headquarters in Neumark et al., 2008), but the standard workhorses are unavailable, weak, or invalid in our setting. For example, the number of establishments in some previous epoch would be a weak instrument, because so many neighborhoods had no stores until recently, and may also be invalid, because the unobservable characteristics attracting coffee shops may not have fundamentally changed. Likewise, no policy experiments provide exogenous variation here.

Instead, we partially address this bias by including observed market characteristics as well as market fixed effects to control for constant, unobserved characteristics affecting the profitability of a market. Temporary market shocks that are correlated with entry and exit patterns are still potentially omitted variables.

Observed characteristics, $X_{\ell t}$, are location-specific demographic variables: household income, population, and unemployment. Geographic market fixed effects, ξ_ℓ, are possible given our long panel of 20 years. Annual fixed effects, ω_t, control for economy-wide shocks that affect all coffee retailers, such as Australia's economic downturn in the early 1990s. A robustness check incorporates

separate market fixed effects for each five-year period of our panel.

Location fixed effects are only identified for markets where exit is observed, because any large positive ξ_ℓ could rationalize the decision to never exit. Likewise, the use of year fixed effects only identifies ω_t in years when exit occurs. Though independent cafes exited in each year, no chain locations closed between 1992 and 1994, so those years are not used in estimating exit regressions for chains. Likewise, independent cafes never exited from 36 markets, so observations from these markets are not used. Nevertheless, there remain 255 separate markets for which we observe independent cafes exiting, and 48 separate markets in which we observe at least one chain exiting.

Under the assumption that ξ_ℓ and $X_{\ell t}$ adequately control for market characteristics, Equation 1 allows us to identify the causal impact of chain store entry on the exit probabilities of independent stores. The coefficient β_{1j} measures the change in the probability of store i of type j exiting when one additional chain store enters i's market. If $\beta_{1j} > 0$ then the entry of chain stores exerts competitive pressure on stores of type j and increases the likelihood of exit.

This reduced form regression model can be estimated with our panel of locations. Structural models usually incorporate richer demand data that are not available for coffee shops.[13] Such data limitations occur often, as many firms publicize their locations but keep their sales quantities proprietary.

3.2 Entry Regressions

Our baseline specification for entry logit regressions is similar. The dependent variable is whether any new shops of type j entered into market m in period

[13]Static structural models have used store locations without demand data (as in Bresnahan and Reiss (1991), Seim (2006), and Cohen and Mazzeo (2007)), but cannot use panel techniques to control for unobservable market characteristics.

t:

$$Pr(any\ entry_{jmt}) = \Lambda\left(\gamma_{1j} n_{chainsmt} + \gamma_{2j} n_{indemt} + \gamma_{3j} X_{mt} + \gamma_{4j} + \phi_m + \psi_t\right) \tag{2}$$

where coefficients on observable characteristics are γ, unobservable characteristics are ϕ, and time effects are ψ (instead of β, ξ, and ω to emphasize that parameter values differ from those in Equation 1). The observational unit is a market instead of an incumbent store, but the location characteristics are the same as in the exit regressions.[14] Standard errors are clustered on the market to account for possible serial correlation between unobserved changes in market profitability during our sample period. γ_{1j} measures the impact of an additional chain store on the probability of a location adding at least one store of type j.

Markets with no entry by a particular type are dropped, because any sufficiently negative ϕ_m would be consistent with no entrants finding the location profitable. There are 129 such markets where no chains enter and 15 markets where no independent cafes enter. Dropping markets creates selection bias, but the larger concern is the omitted variable bias caused by the correlation of unobserved market characteristics and the number of competitors.

4 Results

We first estimate our model of exit for independent shops. Column 2 of Table 3 reports the results of our baseline specification. We do not find evidence that chain stores drive many independents to close. Instead, each chain store

[14]Entrants are stores appearing in the directory for period $t+1$, but not for t. As before, decisions are assumed to be based on the number of competitors listed in directory for period t.

competing in the market raises the probability of the average independent's exit by only 0.12 percentage points. This amount is not statistically significant at any standard confidence level. Yet, independents raise each other's exit probabilities, by 0.60 percentage points (significant at 0.1 percent) for each competing store in the market.

Estimates for the model of exit for chains, presented in Column 2 of 4, mirror these findings. Stores of a different type do not appear to exert much competitive pressure, but stores of the same type do. An additional independent in the market increases a chain's exit probability by only 0.06 percentage points (not significant). Another chain in the market increases it by 2.18 percentage points (significant at 10 percent).

To illustrate the importance of controlling for unobserved characteristics, Column 1 in Table 3 reports a specification without market fixed effects. Its coefficients on the number of both types of competitors are biased downward. The bias is large enough to almost completely obscure competitive pressures. In this specification, a competing chain store appears to lower the exit probability of an independent (albeit by a not statistically significant 0.23 percent). A competing independent appears to raise the exit probability of an independent by only 0.06 percent (instead of 0.60 percent in Column 2).

Market fixed effects account for time-invariant characteristics, such as the physical area or transportation infrastructure. Some relevant unobservable characteristics may vary over time. For example, the entry of coffee shops is associated with gentrification and lower crime rates (Smith, Scherer, Fugerio, 2011). Therefore, we re-estimate our baseline exit equation with separate market fixed effects for every five-year interval. Column 3 in Table 3 reports the results for independents, and Column 3 in Table 4 reports the results for chains. In both, competition from the same type is estimated to make exit

even more likely than in the baseline specification. Competition from chains continues to exhibit no significant effect on the likelihood of independent shops exiting.

As a robustness check, we count competitors within specific distances rather than within the same census region. We use rings of 100 and 1,000 meters to address the possibility that chains and indepedents locate at separate corners or immediately across the boundaries of census regions.[15] Column 5 of Table 3 shows that a chain store within a 100 meter radius has no significant effect on the probability of independent exit. However, an additional independent store within a 100 meter radius increases the probability of exit by 0.65 percentage points (significant at 1 percent). Competition is very local: the number of competitors of either type between 101 and 1000 meters away has no statistically significant influence on exit.

The use of market fixed effects necessitates dropping markets that never have an exit from the regression sample. Most markets had never had a chain exit, making selection bias a concern. (We observe independents closing in 257 of the 289 markets they enter. Thus, selection bias is less concerning for our regressions for independents.) As a robustness check, we therefore estimate the exit probability of chains and independents jointly. In this regression, market fixed effects control for unobserved characteristics that affect both chains and independents. Estimates from jointly estimating exit confirm our main findings: additional chain stores have no significant impact on the probability of independent exit.[16]

[15]Distance bands are frequently used in empirical industrial organization to define markets. For example, Chandra and Tappata (2011) use a distance radius of 1 mile to study price dispersion in retail gasoline markets, Holmes (2011) uses a radius of 25 miles for discount retailing, and Ellickson and Grieco (2013) find that supermarkets in the US only compete with other supermarkets within a 2 mile radius.

[16]A chain in the market increases the exit probability of an incumbent independent by

Results are analogous for the probability of entry: retailers affect the decisions of retailers of the same type. Each additional chain store in a neighbourhood market decreases the probability of another chain store entering by 7.03 percentage points (Table 5, column 2, significant at 0.1 percent). Each additional independent decreases the probability of independent entry by 0.83 percentage points (Table 5, column 4, significant at 5 percent). Chain stores, again, do not have a significant effect on the location choices of independents. Each additional chain store in a market decreases the annual probability that any independent retailers enter that market by 1.51 percentage points (not significant).

There are several plausible explanations for our finding that independents and chains operate in segmented markets. One explanation is that some consumers have a taste for uniqueness. A chain, by the nature of its common branding, offers consistency instead of uniqueness. Independents, with only one outlet, can cater to tastes for a particular ambiance or coffee bean that may not appeal to enough other consumers to sustain a second outlet. Another explanation is based on consumer information asymmetries. Consumers may not know the quality of a new outlet's coffee or whether the outlet fits with their tastes. When visiting a new neighbourhood, consumers may opt for a known chain rather than an unfamiliar, and more risky, independent.[17]

0.17 percent, but the estimate is not statistically significant (not reported in the tables). There is, however, some evidence that independent stores increase the exit probability of chains, by 0.72 percentage points for each additional independent (significant at the 5% level, not reported in the tables). We favor our baseline model since joint estimation does not allow market fixed effects to vary with type. For example, joint estimates assume that large malls have equal effects on profitability for chains and independents, even though we observe a much higher proportion of chains in malls.

[17]Consistent with this explanation, chains have a larger presence in locations that are likely to have a larger share of transient consumers: the CBD, Melbourne's Tullamarine Airport, and hospitals. Of the 578 coffee shops in the CBD in 2010, 9.00 percent are chains compared to 7.23 percent outside shopping malls (Table 1). Of the 9 coffee shops located at

In Melbourne, new entry displaces younger independents more than older independents. This is consistent with an incumbency advantage built on stores establishing a customer base that has learned a store's quality or learned that it matches their tastes. Younger, unproven shops might compete more with new entrants for uncommitted customers. Therefore, they might be more likely to exit in response to new entry. Table 6 shows the results of exit regressions that include store tenure interactions. Age is negatively associated with exit for independents (column 1), and even more so in markets where entry occurs (column 2).

5 Conclusion

Using entry and exit data from 1991 to 2010, we find that chain stores do not drive away independent coffee retailers in Melbourne. Each new chain store in a market increases the annual exit probability of an independent retailer by only 0.12 percentage points. Although chain stores do not drive away indepedents, we find additional chain and independent stores deter entry and prompt exit of nearby stores of the same type. Thus, coffee retailing in Melbourne is strictly segmented by type. This suggests organizational form and ability of brand to transmit information about product quality may be essential determinants of market structure.

The segmentation implies zoning restrictions on retail chains do not protect independent coffee shops, as they face little competition from chains. There are also implications for antitrust analysis, which often evaluates large chain mergers with some weight placed on competitive pressures from independents

the airport, 7 were chains. Of the six Melbourne hospitals listing coffee shops, all contained the same chain (Hudson's).

in local areas.

This analysis uses only directory listings to reveal entry and exit decisions. In this setting, as in many others, comprehensive sales data are not available. Entry and exit decisions respond to market characteristics and competitive interaction. Thus we do not have exogenous variation in market structure and cannot completely control for time-varying correlated shocks, but the richness of our panel data allow us to control for unobservable, time-invariant market characteristics. We can also partly control for time-varying market characteristics with demographic data and separate market fixed effects for each five-year interval. Our empirical strategy is therefore a practical approach that can be used widely when price and quantity data are unavailable.

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Table 1: Coffee retailers and locations

Type	Franchise	CBD	Large Mall	Other	Total
Chains					
BB's Cafe	Y	4	10	16	30
Bonbons	Y	0	7	8	15
Brunetti		1	0	5	6
Coffee Bean and Tea Leaf		2	4	5	11
Coffee Club	Y	0	8	14	22
Degani	Y	7	4	21	32
Gloria Jeans	Y	10	21	48	79
Hudson's	Y	12	1	17	30
Jamaica Blue	Y	1	7	7	15
McCafe	Y	7	2	109	118
Muffin Break	Y	2	13	23	38
Starbucks		6	4	15	25
Independents					
Listed as Cafe		519	123	3,554	4,196
Listed as Coffee Shop		7	4	140	151
Total		578	208	3,982	4,768

Notes: Data on 4,768 cafes and coffee shops that were in business between 1991 and 2010 were hand collected from annual editions of the White Pages and Yellow Pages. Retailers self-identify as either a "Cafe" or "Coffee shop." CBD is Melbourne's central business district. Large Mall includes 11 large suburban shopping centres that span more than 70,000 square meters.

Table 2: Summary Statistics of Market Characteristics

Variable	Mean	Std. Dev.	Min.	Max.
Total cafes and coffee shops	3.664	5.345	0	53
Chain stores in market	0.432	1.072	0	11
Independents in market	3.233	4.958	0	52
Closures	0.437	0.951	0	11
Entrants	0.716	1.307	0	16
Any Entry	0.379	0.485	0	1
by chains	0.059	0.235	0	1
by independents	0.351	0.477	0	1
Central Business District	0.113	0.317	0	1
Large Mall	0.037	0.188	0	1
Middle income households (%)	26.264	6.408	0	62.5
High income households (%)	11.904	9.451	0	100
Unemployment rate (%)	7.892	3.326	3.132	23.571
Neighborhood population (thousands)	12.771	6.503	0	33.436
Markets $\times$ years		$300 \times 20 = 6,000$		

Notes: Each observation is a market-year pair. Data on 4,768 cafes and coffee shops that were in business between 1991 and 2010 were hand collected from annual editions of the White Pages and Yellow Pages. Retailers self-identified as either a "Cafe" or "Coffee shop." Markets are defined by Statistical Area Level 2 (SA2) boundaries. In the Greater Melbourne area, there are 256 SA2s that ever had coffee shops between 1976 and 2010. Large Mall includes 11 large suburban shopping centres that span more than 70,000 square meters. Demographic data from the Australian Bureau of Statistics.

Table 3: Logit–Exit of Incumbent Independents

		+Market FE		Distance rings	
	(1)	(2)	(3)	(4)	(5)
Competing independents					
within market	0.0006*	0.0060***	0.0129***		
	(0.0003)	(0.0015)	(0.0027)		
within 100m				0.0050**	0.0065**
				(0.0019)	(0.0022)
within 101 to 1000m				-0.0003	0.0004
				(0.0002)	(0.0003)
Competing chain stores					
within market	-0.0023	0.0012	-0.0073		
	(0.0024)	(0.0029)	(0.0084)		
within 100m				-0.0072	-0.0033
				(0.0037)	(0.0046)
within 101 to 1000m				0.0004	0.0002
				(0.0010)	(0.0013)
High income households (%)	-0.0000	-0.0010	-0.0086	-0.0004	0.0010
	(0.0005)	(0.0013)	(0.0054)	(0.0006)	(0.0013)
Middle income households (%)	-0.0011	-0.0012	-0.0008	-0.0016	-0.0006
	(0.0008)	(0.0018)	(0.0048)	(0.0008)	(0.0018)
Unemployment rate	-0.0000	0.0065	0.0002	-0.0005	0.0042
	(0.0018)	(0.0036)	(0.0121)	(0.0018)	(0.0037)
Population (thousands)	0.0020***	0.0016	-0.0016		
	(0.0004)	(0.0017)	(0.0087)		
Year indicators	Yes	Yes	Yes	Yes	Yes
Market indicators	No	Yes	Yes	No	Yes
Market × quinquennium indicators	No	No	Yes	No	No
Observations	17601	17364	14063	17601	17364
Pseudo R^2	0.016	0.038	0.063	0.016	0.036

Notes: Marginal effects reported. Standard errors, clustered on market, in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Markets are defined by Statistical Area Level 2 (SA2) boundaries. Demographic data from the Australian Bureau of Statistics.

Table 4: Logit–Exit of Incumbent Chains

		+Market FE		Distance rings	
	(1)	(2)	(3)	(4)	(5)
Competing independents					
within market	0.0005	0.0006	-0.0099		
	(0.0008)	(0.0041)	(0.0105)		
within 100m				0.0014	0.0056
				(0.0020)	(0.0068)
within 101 to 1000m				-0.0003	-0.0011
				(0.0002)	(0.0010)
Competing chain stores					
within market	0.0028*	0.0218	0.0758		
	(0.0014)	(0.0120)	(0.0472)		
within 100m				0.0016	0.0172
				(0.0022)	(0.0121)
within 101 to 1000m				0.0016	0.0044
				(0.0011)	(0.0037)
High income households (%)	0.0001	-0.0076	-0.0400	0.0007	-0.0083*
	(0.0005)	(0.0042)	(0.0281)	(0.0006)	(0.0037)
Middle income households (%)	-0.0023*	-0.0106**	-0.0175	-0.0023*	-0.0099***
	(0.0009)	(0.0037)	(0.0100)	(0.0011)	(0.0030)
Unemployment rate	-0.0026	-0.0038	0.0999	-0.0018	-0.0043
	(0.0020)	(0.0108)	(0.0687)	(0.0027)	(0.0089)
Population (thousands)	-0.0015*	0.0016	-0.0289		
	(0.0006)	(0.0048)	(0.0216)		
Year indicators	Yes	Yes	Yes	Yes	Yes
Market indicators	No	Yes	Yes	No	Yes
Market × quinquennium indicators	No	No	Yes	No	No
Observations	2161	1189	523	2161	1189
Pseudo R^2	0.059	0.190	0.216	0.053	0.189

Notes: Marginal effects reported. Standard errors, clustered on market, in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Markets are defined by Statistical Area Level 2 (SA2) boundaries. Demographic data from the Australian Bureau of Statistics.

Table 5: Logit–New entry by type

	(1) Chains	(2) Chains	(3) Indes	(4) Indes
Chain stores in market	0.0170***	-0.0703***	-0.0013	-0.0151
	(0.0017)	(0.0117)	(0.0071)	(0.0085)
Independents in market	0.0025***	0.0018	0.0535***	-0.0083*
	(0.0005)	(0.0032)	(0.0022)	(0.0036)
High income households (%)	0.0005	0.0115**	0.0051***	0.0034
	(0.0006)	(0.0035)	(0.0013)	(0.0024)
Middle income households (%)	0.0007	0.0069**	-0.0045**	0.0043
	(0.0007)	(0.0026)	(0.0014)	(0.0031)
Unemployment rate	0.0049*	0.0012	-0.0012	0.0045
	(0.0022)	(0.0082)	(0.0034)	(0.0075)
Population (thousands)	0.0019**	0.0008	0.0057***	0.0053
	(0.0006)	(0.0031)	(0.0010)	(0.0030)
Year indicators	Yes	Yes	Yes	Yes
Market indicators	No	Yes	No	Yes
Observations	5700	3249	5700	5358
Pseudo R^2	0.139	0.264	0.223	0.287

Notes: Marginal effects reported. Standard errors, clustered on market, in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. The dependent variable, *any entry*$_{j\ell t}$, equals 1 if there is new entry by a store of type j in market ℓ in year t, and zero otherwise. Data on 4,768 cafes and coffee shops that were in business between 1991 and 2010 were hand collected from annual editions of the White and Yellow Pages. Markets are defined by Statistical Area Level 2 (SA2) boundaries. We divide Melbourne's Central Business District, which contains 12.1% of all coffee shops in our data, into 34 separate markets based on SA1 boundaries. Eleven large suburban shopping centres that span more than 70,000 square meters are also considered separate markets. Demographic data from the Australian Bureau of Statistics.

Table 6: Logit–Exit for Independents, Chains; by store tenure

	(1) Indes	(2) Indes	(3) Indes	(4) Chains	(5) Chains
Competitors in market	0.0053***	0.0056***	0.0054***	0.0060	0.0072
	(0.0013)	(0.0014)	(0.0013)	(0.0037)	(0.0038)
High income households (%)	-0.0009	-0.0008	-0.0009	-0.0082*	-0.0077*
	(0.0013)	(0.0013)	(0.0013)	(0.0039)	(0.0037)
Middle income households (%)	-0.0014	-0.0013	-0.0015	-0.0099**	-0.0104**
	(0.0018)	(0.0018)	(0.0018)	(0.0035)	(0.0037)
Unemployment rate	0.0062	0.0064	0.0061	-0.0078	-0.0082
	(0.0035)	(0.0036)	(0.0036)	(0.0091)	(0.0093)
Population (thousands)	0.0017	0.0018	0.0017	-0.0002	0.0002
	(0.0017)	(0.0017)	(0.0017)	(0.0041)	(0.0040)
Age (years)	-0.0050***			0.0036	
	(0.0008)			(0.0030)	
Age × no entry		-0.0023*			0.0078**
		(0.0011)			(0.0032)
Age × any entry		-0.0060***			0.0021
		(0.0009)			(0.0029)
Age × no chain entry			-0.0048***		
			(0.0008)		
Age × any chain entry			-0.0066***		
			(0.0018)		
Observations	17351	17351	17351	1189	1189
Pseudo R^2	0.042	0.043	0.042	0.187	0.195

Notes: Marginal effects reported. Standard errors, clustered on market, in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Data on 4,768 cafes and coffee shops that were in business between 1991 and 2010 were hand collected from annual editions of the White and Yellow Pages. Markets are defined by Statistical Area Level 2 (SA2) boundaries. All columns include market fixed effects and demographics. We divide Melbourne's Central Business District (CBD), which contains 12.1% of all coffee shops in our data, into 34 separate markets based on SA1 boundaries. Eleven large suburban shopping centres that span more than 70,000 square meters are also considered separate markets. Demographic data from the Australian Bureau of Statistics.

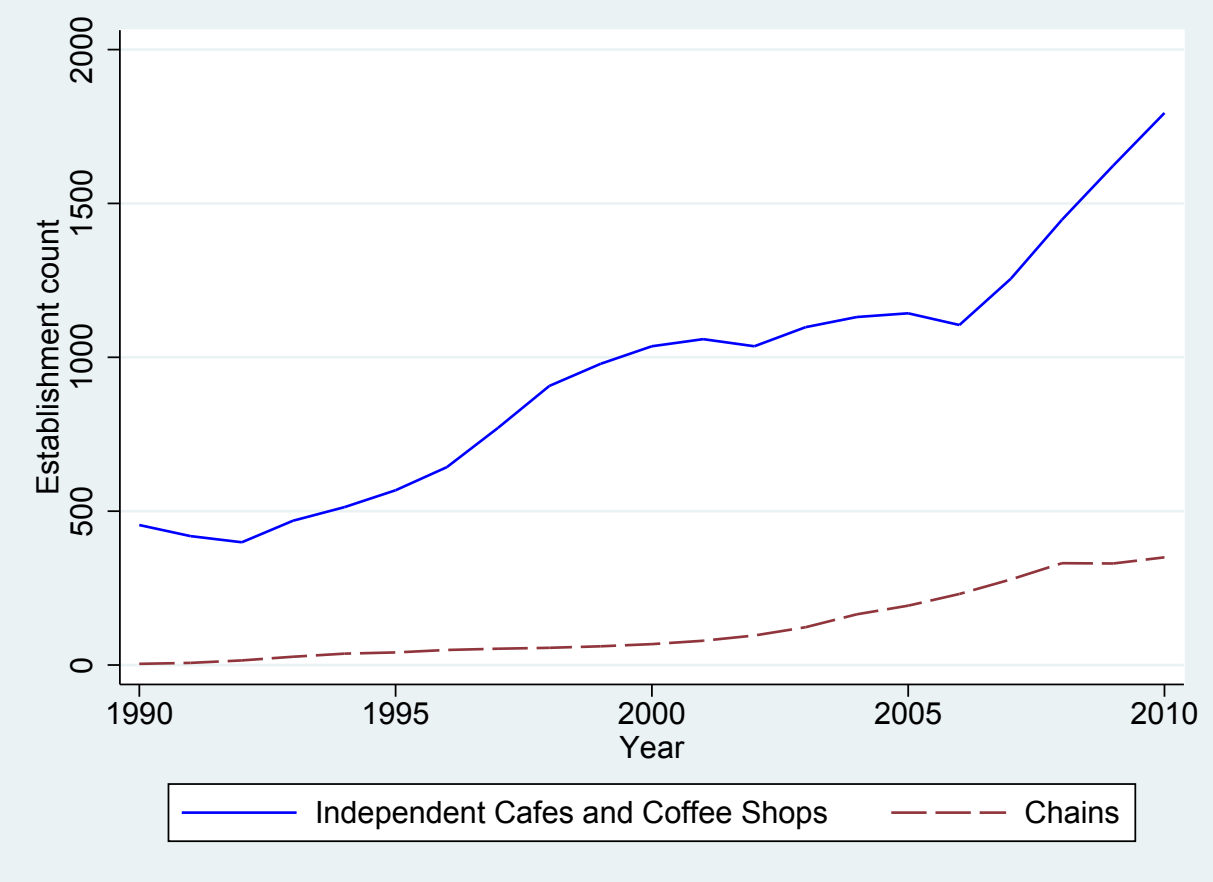

Figure 1: Establishment Counts in Greater Melbourne

Notes: Data on 4,196 independent cafes, 151 independent coffee shops, and 421 chain stores between 1991 and 2010 were hand collected from annual editions of the White and Yellow Pages. Retailers self-identify as either a "Cafe" or "Coffee shop." The chain stores are: BB's Cafe, Bonbons, Brunetti, Degani, Coffee Bean and Tea Leaf, Coffee Club, Jamaica Blue, Gloria Jeans, Hudson's, McCafe, Muffin Break, and Starbucks.