Foreign Market Development As Well As Entry: An Empirical Analysis of Two Fast-Food Chains

by

David L. Leibsohn

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Doctoral Committee:

Professor Francine Lafontaine, Chair
Professor Jan Svejnar
Assistant Professor Jagadeesh Sivadasan
Assistant Professor Arvids A. Ziedonis
Associate Professor Joanne E. Oxley, University of Toronto

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DEDICATION

To my wife, Sakina, and my daughter, Sophie

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CHAPTER 1
INTRODUCTION

This dissertation consists of three empirical studies on the international expansion of US fast-food chains. The first study examines how cross-market externalities—the combined effect of economies of scale and learning from previously entered foreign markets—influence McDonald's choice of foreign market entry mode. The second study further exploits McDonald's international development path in assessing whether the factors that influence timing of foreign market entry also influence the pattern of foreign market development after entry. Finally, the third study investigates how knowledge accrues and transfers within the foreign market operations of another US fast-food franchisor. Together, these studies contribute both methodologically and empirically to better understanding not just how and when firms enter foreign markets but also how they develop their presence and capabilities in foreign markets after entry. Much prior research has focused attention on entry itself, taking entry as an ending rather than a beginning. With this dissertation and the work that grows out of it, I seek to draw the attention of international business researchers towards how firms develop and manage foreign markets after entry. Of particular interest herein is the influence of experience, scale and ownership structures on the development of franchisors' foreign market operations. Additionally, I seek to show the particularly rich and underexplored empirical context of franchised chains as they expand internationally.

In the first exploratory study, I seek to understand the influence of cross-market externalities on McDonald's choice of foreign market entry mode. In contrast to prior research that has typically adopted a cross-section of firms to investigate foreign market entry choices, I exploit a cross-section of countries that a single firm, McDonald's, has entered. In so doing, I seek to control for the effect of market-specific factors that enhance a market's attractiveness and result in earlier market entry so as to identify market-spanning factors—experience and scale in related markets—that may influence which of three modes—contracting, joint venture, and subsidiary—McDonald's chooses to govern operations within a foreign market. While data limitations constrain this study's findings, this initial exploratory study motivated my interest in what happens not only at the moment of entry but rather during the extended period after entry that to date has received notably less attention. Furthermore, I am undeterred in my commitment to obtain additional information to more effectively determine the influence of cross-market externalities related to scale and experience on entry mode decisions.

In the second study, I examine the factors that effect not only entry but also the subsequent growth of retail chains in foreign markets. Specifically, I focus on McDonald's expansion around the globe. Arguably, McDonald's has introduced franchising as well as the American concept of fast-food to many foreign markets. Moreover, this firm has by now expanded throughout most of the world. Thus, it is of particular interest to examine the international expansion path that it chose to pursue. The pattern of entry into foreign markets and growth that I observe contradicts the notion that McDonald's expanded abroad only after saturating existing markets. Instead, I find evidence that is consistent with traditional profit maximization arguments for a multi-

market firm as I see McDonald's allocating resources to achieve growth across many desirable markets, particularly favoring those with greater market potential (higher GDP per capita and population). More importantly, I find that some of the factors that affect expansion post-entry are different from those that affect entry. I interpret these results as evidence that there are sunk costs associated with entry and that the firm adapts its expansion pattern in response to changes in local market circumstances post entry.

The third study analyzes how firm capabilities develop in foreign markets. Learning economies arise when efficiency gains accompany operating experience. Strategy research emphasizes the importance of developing and exploiting learning economies as a means of achieving competitive advantage. This study employs a unique proprietary dataset of 600,000+ weekly observations covering all outlets (2,000+) of the foreign operations of a single global franchised fast-food chain in its 10 largest markets to ascertain just how binding ownership boundaries are to knowledge transfer and to examine how knowledge accrues from operating experience across different countries.

Not surprisingly, I find that recent experience affords greater learning economies than that gained in the past as knowledge is found to depreciate by four percent per week. However, in stark contrast to prior studies, I find that knowledge from experience gained at other outlets owned by the same franchisee affords no significant learning economies and may introduce diseconomies. Interestingly, knowledge derived from the operating experience of outlets owned by country developers—firms responsible for developing a foreign market—appears to matter most. Not only do franchisee-owned outlets within a country experience learning economies from country developer experience but such economies appear to exceed even those related to own outlet experience. Finally,

learning economies can differ by as much as threefold across the countries examined herein and knowledge derived from the chain's total foreign market operating experience seems to afford no learning economies.

These findings challenge the unqualified view that knowledge transfers more readily within firm boundaries than across them. If contracts can equally or more effectively facilitate transfer of knowledge than common ownership, the basic tenet of the knowledge-based view of the firm—that knowledge transfers more readily within firm boundaries than across them—must be reconsidered.

This work demonstrates how the internationalization of franchised service chains and their use of complex multi-level ownership structures afford a rich empirical context in which to examine foreign market development over time. Also, the three studies emphasize the importance of having extensive, detailed panel data to examine empirically the relationships of interest, especially where high levels of multicollinearity (e.g. experience and time) make identification difficult. In concert, these studies contribute to understanding foreign market development as well as entry and suggest that what happens after foreign market entry merits greater research attention.

CHAPTER 2
CROSS-MARKET EXTERNALITIES AND FOREIGN MARKET ENTRY MODE

2.a. Introduction

Foreign market entry mode is among the most important decisions facing a firm expanding abroad. Entry mode largely defines the structure of incentives, control, and rewards through the allocation of ownership between the firm entering the foreign market and its local agent(s). As such, it is a critical factor for success within the foreign market. Further increasing the importance of a firm's entry mode selection is the fact that it involves a discrete choice that is typically infrequently altered thereafter. Not surprisingly then, much attention has been attributed to the question of how firms enter into new foreign markets.

Researchers within cost-economizing frameworks—including transaction cost and agency theory—have viewed the firm's entry mode choice as being a response to the firm's environment, the tasks undertaken and the skills of the parties involved. An extensive body of knowledge has emerged from this stream of research to explain how the foreign market attributes alter the relative costs of organization among discrete alternatives. Most often adopting a cross-sectional approach, this research has sought to control for firm specific factors such as age and experience at a moment in time. However, one might well expect firms to adjust their entry mode choices not just as a function of market-specific factors but also as a function of market-spanning factors. If prior experience in a related market enables the firm to better understand how to operate

within a new market, the firm will be less dependent on the local agent than absent such knowledge. Furthermore, the current scale in proximate countries already entered may create the possibility of scope or scale economies that may be easier to realize if the activity were fully owned and operated. This exploratory study seeks to empirically test for the influence of such cross-market externalities on the choice of market entry mode.

Knowledge from prior foreign experience diminishes the firm's dependence on local agents both by enabling the firm to better understand how the business might adapt to local market preferences and by enabling it to better oversee the effort of its local agents. On the one hand, such knowledge would enable the firm to stipulate contracts that provide higher-powered incentives for local agents and that appropriate greater rents for itself. On the other hand, agency theory suggests that knowledge also reduces the cost of monitoring local agents that are employed by the firm. Also, greater foreign presence is accompanied by the need for greater coordination of the activities undertaken across multiple markets. The requirement for coordination makes it more costly for firms to relinquish control, suggesting that as a firm's foreign presence increases it is more likely to retain ownership when entering new foreign markets.

Effectively balancing these competing considerations is especially important for firms seeking to develop a global brand. For these firms, entry mode choice is particularly susceptible to cross-market externalities—one market's operations influencing another market's operations. As such, I examine the international expansion decisions of McDonald's Corporation, undeniably a leader in global branding, to ascertain whether greater international experience and scale increase or decrease its likelihood of retaining ownership when entering new foreign markets. This work is

exploratory in that prior cross-sectional research has not effectively distinguished cross-market externalities from market-specific factors related to entry timing when investigating the choice of entry mode. In future research I will extend this analysis to encompass a wider sample of fast-food franchisors.

This chapter is organized as follows. In section 2.b., I introduce the empirical setting, define "foreign market entry mode" and briefly review alternative criteria in choosing foreign market entry modes to develop hypotheses relating cross-market externalities to entry mode choice. In section 2.c., I describe the data. I present the empirical methodology and findings in section 2.d.. In section 2.e., I examine next steps.

2.b. Empirical Setting, Definitions and Prior Theory

While the issue of foreign market entry mode is of concern to all firms expanding abroad, it is of particular importance to franchised chains. Where foreign market expansion involves monitoring and coordinating outlets widely scattered across a market, correctly configuring operations is especially important. Incorrect governance mode choices may well lead to brand erosion, increasing the likelihood of the chain's disintegration. As such, one would expect franchisors to focus particular attention on how they enter foreign markets.[1] Given franchised chains' domestic—and perhaps foreign—experience with franchising, however, they should exhibit less reluctance to relinquish control via long-term contracts. This is empirically supported by prior research. (Walker, 1989; Kalnins, 2005) noted the prevalence of long-term contracts to enter foreign markets.

[1] While the McDonald's data does indicate that franchisors can and do change governance modes as markets develop, such changes tend to arise only after several years of operation, indicating that entry mode choices tend to remain in place for some time.

All franchised chains expanding abroad develop two distinct activities within the foreign market. The first is quite obviously operating the outlets that comprise the business concept being transferred from the home market into the foreign context. The second corresponds to the role that the franchisor plays within its home market. The franchisor serves the role of ensuring that brand quality and consistency are maintained by coordinating the efforts of the diverse, widely distributed operating outlets. This study considers exclusively the question of entry mode and governance relating to the latter role assumed by the franchisor in the domestic market. I assume that franchisors enter foreign markets with a single market-wide governance mode.[2]

Due to the heterogeneity in contracting practices across franchised chains (Lafontaine & Shaw 1999), I restrict my attention to a single franchised fast-food chain—McDonalds. I study the period from the company's inception in 1955 through 1999. This chain has led the international expansion of US franchised chains over the past 35 years, and by 1999 had entered 118 foreign markets. As McDonald's was most often the first US fast-food chain to enter each foreign market, the importance of strategic issues with respect to Burger King or Wendy's entry timing are largely diminished and will not be addressed here. If any franchised chain effectively analyzes foreign markets, and structures its foreign operations to advantage, McDonalds would seem the most likely candidate. By 1999, McDonald's generated $19 billion annually in foreign sales, exceeding its domestic sales for the first time and exceeding the foreign revenues of any other US (or foreign) franchised chain. Thus, although this analysis is limited to a single

[2] For the firm studied here, McDonald's, this proves a valid assumption since the only instances where it entered a country with more than one entry mode involved multiple joint ventures. As such, I am able to view joint venture as the foreign entry mode and there are just several of them employed within that market. Furthermore, Kalnins found additional support for this assumption within other franchised chains expanding abroad. (Kalnins, 2005)

company and as a result is subject to a lack of generalizability, McDonald's entry into such a large number of different countries provides an interesting case in which to examine empirically foreign market entry mode choices over time as a firm expands abroad.

The internationalization of franchised chains has received scarce attention within academic circles. What little published research exists directly addressing international franchising principally concerns (1) the extent of franchising as an organizational form within different markets (Welch, 1989; Whitehead, 1991; Preble and Hoffman, 1995; Swartz, 1995); (2) the motivations and required capabilities of franchisors wishing to expand abroad (Aydin and Kacker, 1989; McIntyre and Huszagh, 1992; Fladmoe-Lindquist, 1996; Shane, 1996; Falbe and Welsh, 1998); and (3) the conditions under which one expects to see franchisors own or franchise outlets in a selected foreign outlet (Erramilli and Rao, 1990; Fladmoe-Lindquist and Jacque, 1995; Contractor and Kundu, 1998, 1998). To my knowledge, only two studies have examined empirically how multinational franchised chains govern foreign markets. (Lafontaine and Oxley, 2004; Kalnins, 2005) Thus, this study seeks to shed light on foreign market entry mode choice within a new empirical context.

Researchers use the phrase "foreign market entry mode" to mean different things. Some compare entry through greenfield investment—startup of a new enterprise by the entering foreign firm—versus acquisitions of preexisting host-country firms. Others concentrate on what organizational form—contracting, alliance, joint venture, subsidiary—is adopted to govern the operations within the foreign market. Still others focus exclusively on the proportion of ownership retained by the entering firm when

setting up operations in a new foreign market. For the purposes of this study, entry mode assumes one of three forms—long-term contracting, joint venture or subsidiary—as these are the three modes observed in the data. Each of these modes implies a different division of equity between McDonald's and its local partner(s); contracting leaves all equity with the local partner, a joint venture involves shared equity, while in a subsidiary McDonald's retains all equity. These discrete organizational forms thus sit upon a continuum reflecting the degree to which McDonald's retains control through ownership.[3] Additionally, ownership choices are often viewed as influencing the degree to which knowledge transfers across operating units of a firm. I explore this issue more fully within Chapter 4 of this dissertation.

Prior research regarding the choice of foreign market entry mode has emerged from two distinct branches of business research: one cost-economizing and the other risk reducing. The former is populated by economics-trained researchers largely in the transaction-cost tradition while the latter is comprised of sociology-trained researchers grounded in the behavioral theory of the firm.

Transaction cost economists (TCE) view governance as, "…a means by which to infuse *order* in a relation where potential *conflict* threatens to undo or upset opportunities to realize *mutual* gains." (Williamson, 1975, 1985, 1996) TCE describes the firm as a governance structure where:

1. Human actors are both boundedly rational with foresight and "self-interest seeking with guile".

[3] For franchisors developing *their own brand equity* within foreign markets, it seems reasonable to assume that entry will not arise through acquisition of a pre-existing, known business that will become part of the McDonald's franchise. This assumption is further supported by the fact that only in Italy did McDonald's undertake an acquisition. Furthermore, in this instance it had been present in the Italian market for some time.

2. The transaction is the basic unit of analysis and occurs when "a good or service is transferred between technologically separable stages" of an economic activity. Transaction attributes—frequency with which transactions arise, uncertainty to which transactions are subject, and the degree to which transactions are supported by transaction specific assets—explain much with regard to how firms organize economic activity.
3. Alternative modes of governance (market, hybrid, firm) differ in discrete structural ways determined jointly by private efforts to craft mechanisms addressing incentive intensity and administrative control and by the institutional environment—polity, judiciary, laws of property and contract.
4. Alternative governance modes have distinctive advantages and disadvantages in adapting to unanticipated circumstances that arise during the transacting period. The nature of the required adaptation—autonomous or coordinated—among parties involved in a transaction influences the relative costs of organizing economic activity under alternative governance modes.
5. Firm boundaries are constrained by implementation problems relating to replication and selective intervention within the firm.

Given the aforementioned, TCE asserts that transactions that differ in their attributes are aligned with governance structures that differ in their costs, so as to effect an economizing result. Where there are no hazards to transacting in the market, TCE takes market exchange as the default governance mode because it requires no bureaucracy to govern economic exchange. However, in many circumstances the contracting hazards stemming from both ex-ante and ex-post opportunistic behavior by exchange parties can lead to market failure, where the increased risk attendant to transacting exceeds potential gains. When consummation of a transaction requires coordinated bilateral adaptation to address *unforeseen future contingencies* (aka uncertainty), safeguards emerge to mitigate opportunistic behavior and credibly commit parties to coordinate. Where hazards such as free riding or leakage of proprietary assets are too large, the safeguard takes the form of internalizing the transaction within the hierarchy of the firm. However, hybrid modes of organization such as franchising or joint ventures that sit between markets and hierarchies on an organizational continuum may enable parties to better balance the requirements for

bilateral coordinated adaptation with those for autonomous adaptation. Through the lens of TCE foreign entry mode decisions are made so as to safeguard against a diverse set of transacting hazards. As increasing market uncertainty makes bilateral adaptation difficult through the price mechanism, either joint ventures or subsidiaries will emerge to safeguard against such hazards.

An extensive body of theoretical and empirical literature on foreign entry mode has grown out of the TCE framework (Anderson and Gatignon, 1986; Gatignon and Anderson, 1988; Teece, 1986). Asset specificity and institutional environment uncertainty have received the greatest attention from these researchers who have provided empirical support for many of the aforementioned tenets of TCE. However, TCE has been relatively quiet with regard to the impact of prior experience on the choice of foreign market entry mode. (See the work of Witold Henisz as a notable exception.) Whether such silence stems from theoretical leanings to examine discrete (and therefore unchanging) structural alternatives or merely from a lack of data, TCE researchers have tended to undertake cross-sectional analyses. In so doing, these researchers have jointly controlled for experience ***and*** entry timing through the use of firm age, years of foreign experience or firm size. This approach has not enabled these researchers to determine whether the influence on choice of entry mode stems from market attractiveness indicated by entry timing or rather from the experience of having operated within other markets prior to entering a new market. In spite of TCE's contributions and robustness within static and comparative-static contexts few longitudinal studies exist (e.g. Chang & Rosenzweig, 2001) and fewer still have sought to understand the influence of market-spanning factors such as the evolution of firm size, scope, and experience on the selection

of foreign market entry mode (Henisz, 2000). And, those that have do not isolate market-spanning factors from market attractiveness with respect to the influence of each on entry mode chosen.

Sociologists or business researchers adopting the lens of internationalization theory contend that risk aversion combined with limited knowledge of foreign market environments lead firms to expand abroad incrementally, increasing progressively their commitment to foreign operations (Johanson and Vahlne, 1977, 1990; Barkema, Bell, & Pennings, 1996). A basic tenet of this theory draws upon a key assumption espoused by the behavioral school of thought: Individuals within large organizations exhibit uncertainty avoidance to a great degree, emphasizing short-run reaction in response to short-run feedback rather than anticipating long-run, uncertain events. (Cyert & March 1963) According to internationalization theory, manufacturing firms initially export into foreign markets, then establish offshore sales subsidiaries and finally transplant production facilities. In the current setting, franchised chains can neither export nor merely establish sales subsidiaries. Consequently, in this context, the corollary would be a progression from long-term contracting to joint ventures and then finally to fully-owned subsidiaries. Thus, this school of thought adopts a more dynamic approach to studying foreign market entry than TCE, predicting that as firms gain foreign experience they tend to increase their ownership stake when entering new markets. Unfortunately, the underlying mechanisms that explain the preeminent role of risk and downplay the role of potential returns are unclear within this theory. Consequently, while internationalization theory has received some empirical support (Luostarinen, 1980; Newbould, Buckley and Thurwell, 1978), it remains unclear what such analyses are actually testing.

In this study, I examine the effect of cross-market externalities, including the value of prior experience in other foreign markets and the current scale of operations in other markets, on franchised chains' foreign market entry mode. In so doing, I seek to understand whether McDonalds' choices are consistent with cost-economizing motives, risk-aversion motives or both. For risk aversion motives, the test merely involves understanding whether McDonald's entry mode choice is predominantly lower-equity stakes during the early years of expansion with an increasing equity stake as the firm enters more markets. For cost-economizing, the test is more difficult. These motives would dictate that the equity stake at time of entry increases as uncertainty and expected market scale increase. The former makes it hard to contract efficiently whereas the latter justifies a greater equity stake. But experience in other markets may reduce the uncertainty of the market being entered, making it easier to contract efficiently. Also, scale in other markets may drive the firm to assume a greater equity stake so as to coordinate activity across markets more effectively. As I am unable to disentangle measures of cross-market scale from those of cross-market experience, I am left without a clear prediction but rather with the ability to determine the net effect of these two underlying mechanisms.[4]

[4] Given the limitations of the data, I am only able to examine the NET effect of the cross-market externalities but am currently exploring how in future work I may disentangle the influence of experience from that of scale in other foreign markets.

2.c. Data

From McDonald's 1955 to 1999 annual reports, I identified the timing of entry into each country, entry mode employed, and year-by-year outlet counts from that point forward. ***EntryMode*** then is defined as the governance mode employed by McDonald's when entering a foreign market. This variable takes one of three possible values:

EntryMode=1 for a long-term contract where the local agent retains complete ownership
EntryMode=2 for a joint venture where McDonald's shares ownership with the local agent
EntryMode=3 for a subsidiary where McDonald's retains complete ownership

I use the annual outlet count data for each market to calculate alternative measures of foreign market experience and scale, based upon three aspects: years in market, number of markets, and number of outlets.

Ideally the measure(s) selected for this analysis should respectively capture the degree to which McDonald's learning from prior experience diminishes uncertainty in subsequent similar markets, and the extent of economies from coordination across markets or increased interdependencies due to such spillovers as arise from customers that visit outlets across multiple markets. I proxy for actual cross-market externalities with measures of the ***opportunity*** for cross-market externalities. Time in foreign markets and scope of foreign presence are the two dimensions that most likely increase the opportunity for cross-market externalities. The longer McDonald's has been operating in a specific geographic territory, the more exposure it has gained to changing environmental conditions in similar contexts. As such, it will likely have learned to interpret and respond to such changes more effectively. Also, with greater scope of market experience, McDonald's gains a more diverse set of contexts from which to draw upon. As McDonald's expands it presence outside its home market there also exists

greater opportunity to leverage economies of scale such as consolidating purchases for all markets within a region or developing advertising campaigns that span multiple markets (e.g. all Spanish language markets).

I explore five distinct measures of the "opportunity for cross-market externalities". They are: ***Markets***, ***Outlets***, ***Years***, ***Market-Years***, ***Outlet-Years***. ***Markets*** is a count of the number of markets that McDonald's has entered within a geographic territory. ***Outlets*** is similarly the number of outlets operated in a geographic territory. ***Years*** is the number of years McDonald's has been present in a geographic territory. ***Outlet-Years*** cumulates the number of years of operation across all outlets in a geographic territory. Finally, ***Market-Years*** cumulates the number of years of operation across all markets in a geographic territory. For instance, if in year one McDonald's opened its first foreign outlet within Canada and in year two McDonald's opened two more outlets in Canada and entered Germany as well with one outlet then as it contemplated entry into an additional market in year 3 it would have 4 outlet-years experience and 3 market-years experience. These alternative measures capture different aspects of possible cross-market externalities, placing different emphasis on current scale and prior experience, depending on the measure considered.

I specify "geographic territory" along two dimensions: Foreign, and Regional.[5] Foreign involves all markets and outlets outside of the United States. Regional assigns markets and the outlets in them to six CIA-defined regions: Western Europe, Eastern Europe, South America, North America/Caribbean, Oceania/Asia, and Africa/Mideast.

[5] Two alternative measures relating to McDonald's own internal administrative country groupings and country groupings based on Hofstede's cultural distance measures (Hofstede, 1983) as well as groupings based on common language spoken were also examined. The use of these different regional groupings added little to the model and was accordingly dropped.

Experience operating within several European countries would likely make it easier (i.e. less costly) to enter additional European countries but would afford relatively less help in entering a country in Asia. This illustrates how regional experience may well be more relevant than all foreign experience combined and explains the use of regional measures as well as foreign measures. Table 1 below reflects the different measures that emerge when coupling the earlier measures of cross-market externalities with the two geographic dimensions identified here.

Table 1: Alternative Measures of Cross-Market Externalities

	Markets	*Outlets*	*Years*	*Market-Years*	*Outlet-Years*
Foreign	*ForeignMarkets*	*ForeignOutlets*	*ForeignYears*	*ForeignMarketYears*	*ForeignOutletYears*
CIA Region	*RegionMarkets*	*RegionOutlets*	*RegionYears*	*RegionMarketYears*	*RegionOutletYears*

Foreign measures of cross-market externalities exhibit extreme multicolinearity with correlations in excess of 0.95, while regional measures exhibit only slightly lower multicolinearity with correlations ranging from 0.82 to 0.98. Combined with the limited number of observations in my data, this multicollinearity has two implications: (1) only one foreign and one regional measure may be used within each regression and (2) little empirical difference exists among the different measures. Following the earlier logic, the opportunities for cross-market externalities seem to increase with both the number of years (prior experience) and the number of markets (current scale). Consequently, I adopt foreign market-years and regional market-years as my measures of cross-market externalities.

I introduce several country-specific variables relating to market potential, market uncertainty, and market connectedness internationally. Market potential captures the

potential magnitude of operations within a country. As the magnitude increases, the setup costs of establishing an equity stake and actively coordinating the foreign market operations will likely be offset by the potential rents in the market. Consequently, one should observe greater equity stakes where market potential is higher, all else equal.

As uncertainty increases in a market, TCE says that it becomes more difficult to write contracts and more important to gain the benefit of local agent skills and knowledge that can help manage such uncertainty. Joint ventures would seem an efficient organizational form where uncertainty impedes contracting but where there still exists the need to induce local agent effort. Joint ventures have the benefit of enabling partners to be motivated to contribute effort required for success when ex-ante it is difficult to stipulate future contingencies for an uncertain future.

Finally, to the extent that the country is well connected to the world economy in general, and the US in particular, firms will benefit from additional information available with respect to the foreign market. Foreign trade reflects the degree to which knowledge flows to foreign firms regarding the specific business operating practices and general environmental context of a market. Where greater knowledge regarding a market diffuses from prior foreign entrants, it will be easier to specify contractual agreements, increasing the likely use of less hierarchical modes of entry. In short, information spillovers serve to mitigate market uncertainty and improve the ability of foreign firms to manage operations in new country through lower-equity governance modes (e.g. contracting). Similarly, if a market is further geographically from a firm's home market, it is both more difficult to coordinate, more risky, and there is likely reduced knowledge spillovers across firms.

Governmental policies can explicitly or implicitly constrain the feasible set of governance modes available to a foreign firm entering the market. For instance, a government can ban foreign direct investment or make it administratively so costly as to preclude foreign firms from establishing subsidiaries or even assuming an ownership stake in the foreign market. Complicating data collection, country regulations varied greatly over my study's time period. I employ an index of the degree of capital account openness developed by Brune to capture the ease with which firms can repatriate gains back to their home market.

McDonald's endogenously selects which markets to enter when. The selection of when to enter is likely to confound understanding the relationship between experience and entry mode choice. More attractive markets will most likely be entered earlier and therefore McDonald's will have less experience when entering these. Furthermore, the very characteristics of a country that makes it attractive to enter may make that country more likely to be governed by one or another entry mode. A correlation between entry time and mode reflects not exclusively the influence of experience and scale in other related markets but likely also the relative attractiveness of the market. As such, market entry timing must be controlled for if I am to understand the independent impact of experience in previously entered markets on foreign market entry mode choice.

To control for market entry timing, I estimate empirically the relative attractiveness (a variable I call ***MarketAttract***) of each country into which McDonald's enters based exclusively on country-specific characteristics. I use two different approaches. First, I derive an OLS estimate of the predicted year of entry. As OLS suffers both from potential violations of normality of the error terms and from censoring

of markets not entered, I then re-estimate ***MarketAttract*** using a duration model. Duration models have the advantage of employing the additional information embedded in the fact that certain markets weren't entered but could have been. They also control for right censoring where McDonald's has not as yet entered a market but may in the future. In addition, duration models also allow greater flexibility when confronted with errors that aren't normally distributed. These advantages explain the popularity of duration models in examining timing of foreign market entry. (Henisz & Delios, 2001; Delios & Henisz, 2001; Henisz & Macher, 2003; Henisz & Delios, 2002)

To estimate market attractiveness, I employ five country characteristics: ***GDP/Cap***, ***Population***, ***PoliticRisk***, ***ForeignOpenness***, ***ForeignTrade/GDP***, and ***HeadquartersDistance***. In Table 2 below I report the regression results along with descriptive statistics for ***MarketAttract*** measures generated by OLS and a duration model assuming a gompertz distribution.

In the linear model, ***GDP/Cap*** and ***Population***, are negatively signed, reflecting that greater market potential results in markets being entered earlier. As the distance between a country and McDonald's headquarters (in Chicago) increases, entry is delayed. The duration model provides consistent findings for market potential and country distance.[6] In addition, the duration model finds that greater political uncertainty (***PoliticRisk***), greater ability to repatriate profits (***ForeignOpenness***), and greater foreign trade as a portion of a country's GDP (***ForeignTrade/GDP***) increase the likelihood of entry into a market. These findings are all consistent with prior research. The greater

[6] The duration model estimates probability of entry while the linear model estimates date of entry. As such, a negative sign in the linear model means a country is expected to be entered earlier whereas a positive sign in the duration model means a country has a higher probability of being entered. This explains the differing signs between the two models.

information exploited in the duration model causes all variables to become significant in influencing entry timing—my measure of market attractiveness.

Table 2: Results of Alternative Models to Estimate Market Attractiveness & Related Descriptive Statistics

Dependent= ***EntryYear***	Linear	Duration (Gompertz)
GDP/Cap	-5.818	1.487
	[1.239]**	[0.211]**
Population	-1.827	0.703
	[0.708]*	[0.107]**
PoliticRisk	2.473	2.259
	[4.767]	[0.691]**
ForeignOpenness	-0.445	0.154
	[0.351]	[0.060]*
ForeignTrade/GDP	0.001	0.012
	[0.023]	[0.004]**
HeadquartersDistance	7.3	-1.09
	[1.921]**	[0.287]**
Observations	83	2,258

Standard errors in brackets. * significant at 5%; ** significant at 1%

						Correlations		
Variable	**Obs**	**Mean**	**Std. Dev.**	**Min**	**Max**	**1**	**2**	**3**
(1) Actual entry year	92	1987.28	9.31	1967	1999	1.00		
(2) ***MarketAttract*** Linear	83	1987.28	5.51	1965	2002	0.30	1.00	
(3) ***MarketAttract*** Duration Gompertz	58	-5.34	1.10	-7.73	-2.73	-0.16	-0.65	1.00

By first estimating ***MarketAttract*** and then incorporating the estimates into the entry mode models discussed later, I assume that McDonald's first determines which markets to enter and then defines the entry mode to adopt rather than simultaneously making both decisions. In future work I will explore this assumption in greater detail by employing a competing risks model to estimate likelihood of entry into a market by alternatively a contract, joint venture or subsidiary. A summary of the independent variables employed in the empirical analysis that follows is provided in Table 3 below.

Table 3: Independent Variable Definitions and Sources

Variable	Definition	Source
Market Potential		
GDP/Cap	Logged real (1995) $International GDP/Capita	World Bank, Global Development Network Growth Database, William Easterly
Population	Logged total population	US Bureau of the Census
PopGrowth	Average annual population growth rate over prior 10 years	US Bureau of the Census
Market Uncertainty		
EconRisk	Economic uncertainty; mean standard error of **real domestic currency** GDP/Cap regressed on time over prior 10 years divided by average GDP/Cap over same period.	Penn World Tables
PoliticRisk	Political uncertainty; index ranging from 0 (least stable) to 1 (most stable) of the **stability** of policy decisions.	Henisz (2000) "polconiii" measure from Witold Henisz's website.
ExchgeRateRisk	Exchange rate uncertainty; instability of $US exchange rate measured as the standard deviation of the preceding 10 years divided by the average exchange rate over same period.	World Bank, Global Development Network Growth Database, William Easterly
Cross-Market Externalities		
ForeignMarket-Years	Log (# market-years in all foreign markets)	McDonald's Annual Reports
RegionMarket-Years	Log (# market-years in CIA region)	McDonald's Annual Reports
Interaction Terms		
EconRisk X Regional Market-Years	Multiplicative interaction term	
PoliticRisk X Foreign Market-Years	Multiplicative interaction term	
ExchgeRateRisk X ForeignMarket-years	Multiplicative interaction term	
Global Connectedness		
MarketAttract	Relative attractiveness of market for entry	Estimated herein.
ForeignOpenness	Index of capital account openness that may constrain foreign investment options	(Brune, 2004)
ForeignTrade/GDP	Total foreign trade (exports + imports) as % GDP	World Bank, Global Development Network Growth Database, William Easterly
USTrade	Log ($US trade w/market)	Statistical Abstract of the US
HeadquartersDistance	Distance from McDonald's headquarters in Chicago, IL to capital city of foreign country	Fitzpatrick and Modlin, 1986, Direct Line Distances

Before advancing to the econometric models, I examine the raw data regarding McDonald's international expansion and foreign entry mode choices. Figure 1 provides an overview of McDonald's foreign market entries year-by-year from 1967 (when Canada marked its first foreign market entry) through 1999. The number of foreign market entries per year range from none (1968, 1969 and 1980) to thirteen (1996). Three time periods (pre 1980, 1981-1989, 1990 and after), emerge from this chart. The 27 Pre 1980 entries involve expansions to generally attractive markets (ie. Germany, Japan, Australia) or to those that are geographically proximate (Caribbean & Central American markets). The 23 entries between 1980 and 1989 involve expansion into markets with relatively less potential and represent an extension of the expansion effort in the preceding period. The post-1989 period distinguishes itself both by the large number of foreign market entries, 50, and the nature of the markets entered. Many of the market entries within this period involve entries into freed or liberalized countries (ie. former Eastern European countries, China, South Africa, Kuwait). This period also witnessed a relatively large number of entries within the Middle East. Together, this chart exhibits a pattern of expansion where McDonald's seems to first enter markets with the greatest size and stability and then proceed progressively to smaller, less stable markets.

Figure 1: McDonald's Market Entry by Year

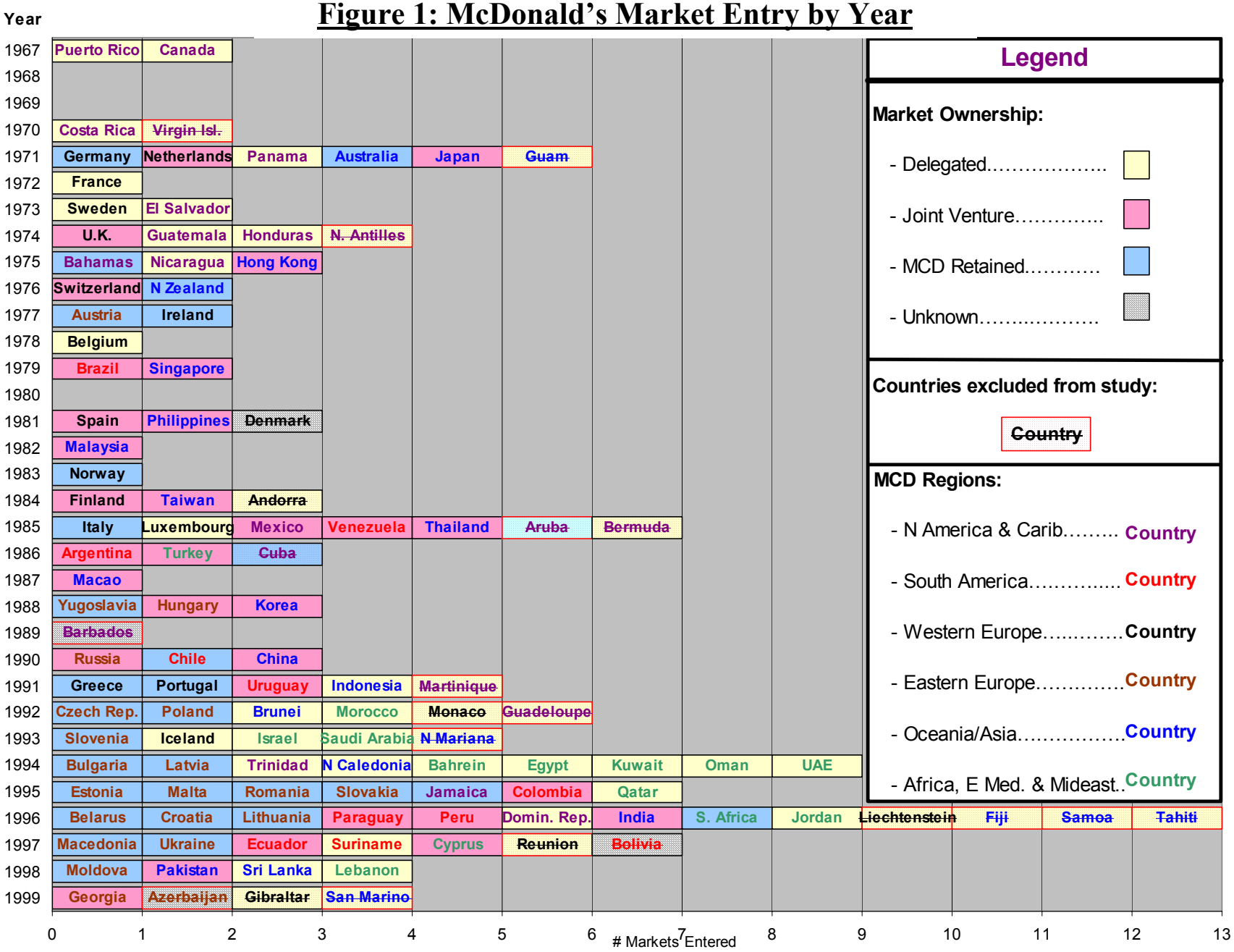


Table 4 examines the characteristics of McDonald's cross-market measures of experience/scale, country-specific factors, and the regional breakdown by foreign market entry mode selected. Contracting and joint ventures are difficult to distinguish in terms of their timing of usage as indicated by the same mean year of entry for markets employing these entry modes. Except for Western Europe where the choice of entry mode is evenly split among contracting, joint venture, and subsidiary, the region entered is strongly predictive of the entry mode that McDonald's selects for a market within that region. In Eastern Europe 17 out of 20 markets were entered using a subsidiary; in South America 8 of 10 markets were entered using a joint venture; in North America and the Caribbean 10 of 13 markets were entered using contracting; in Oceania & Asia 11 of 18 markets were entered using joint ventures; in Africa & the Middle East 11 of 14 markets were entered using contracting.

Joint ventures tend to be employed in markets with greater potential as reflected by larger real GDP and GDP/Capita; whereas, smaller markets are organized under a contractual relationship with local partners. Greater political policy instability, ***PoliticRisk***, and greater economic risk, ***EconRisk***, are correlated with the use of subsidiaries while lower economic risk appears to be associated with the use of joint ventures. Without conducting an econometric analysis that accounts for market heterogeneity however, it is difficult to know whether this reflects market characteristics that differ from region to region or distinct approaches on McDonald's part to structuring ownership in different regions. This table provides evidence of entry mode differences across foreign regions, consistent with the view that regional cross-market externalities matter.

Table 4: Descriptive Statistics by Foreign Entry Mode

	Overall	Contracting	Joint Venture	Subsidiary
Mean Year of Entry	1987	1986	1986	1989
Total Company Experience (years)	31.19	30.18	30.17	33.23
BREAKDOWN OF ENTRY MODE BY REGION				
Western Europe ('71 – '93)	16	5	5	6
Eastern Europe ('77 – '99)	20	0	3	17
South America ('79 – '97)	10	1	8	1
North America ('67 – '96)	13	10	1	2
Oceania & Asia ('71 – '98)	18	5	11	2
Africa & Middle East ('86 – '98)	14	11	1	2
Total	91	32	29	30
MEAN LEVEL OF FOREIGN EXPERIENCE AND SCALE AT TIME OF ENTRY				
Foreign Markets	42.84	40.38	40.03	48.17
Foreign Outlets	4,315	4,067	3,929	4,954
Foreign Years	20.19	19.19	19.17	22.23
Foreign Market-Years	453	439	403	516
Foreign Outlet-Years	26,261	25,837	22,697	30,158
MEAN LEVEL OF REGIONAL EXPERIENCE AND SCALE AT TIME OF ENTRY				
Regional Markets	6.3	6.69	6.45	8.10
Regional Outlets	331	575	644	304
Regional Years	12.25	11.03	11.97	13.83
Regional Market-Years	46.53	56.16	53.10	54.03
Regional Outlet-Years	1,672	3,455	3,142	1,355
COUNTRY-SPECIFIC FACTORS				
GDP/Capita	$7,893	$9,355	$7,151	$7,051
Econ Risk	0.029	0.028	0.017	0.039
Politic Risk	0.296	0.231	0.297	0.360

Table 5 examines the entry mode choice, country characteristics and regional entry decisions by each of the three time periods (pre 1980, 1981-1989, 1990 and after) discussed above. The use of subsidiaries is associated with later entries (and necessarily more foreign experience) than either contracting or joint ventures. This would seem consistent with the internationalization view that firms assume entry modes with higher equity stakes only after having gained a substantial amount of experience in international

expansion. McDonald's enters markets that are more attractive based on GDP/Cap and the level of Economic and Political Risk earlier than those that are less attractive. This conforms to earlier findings from the regression to derive the measure ***MarketAttract***. As noted above, different regions seem to assume greater or lesser importance in McDonald's international expansion within the three designated time periods.

Table 5: Descriptive Statistics by Decade of Entry

	Before 1980	1980 – 1989	1990 – 1999
ENTRY MODE BREAKDOWN			
Total # entries	**24**	**17**	**50**
- Contract	11	2	19
- JV	7	11	11
- Subsidiary	6	4	20
COUNTRY-SPECIFIC FACTORS			
GDP/Capita	$11,714	$8,770	$5,761
Econ Risk	0.019	0.020	0.036
Politic Risk	0.309	0.319	0.282
ENTRY TIMING BY REGION			
North America	37.5%	5.8%	6.0%
South America	4.2%	11.8%	14.0%
Eastern Europe	4.2%	11.8%	34.0%
Western Europe	33.3%	29.4%	6.0%
Asia & Oceania	20.8%	35.3%	14.0%
Africa & Middle East	0.0%	5.9%	26.0%
Total	100.0%	100.0%	100.0%

2.d. Methodology & Findings

This study asks whether cross-market externalities influence McDonald's in its choice of foreign market entry mode? If so, what is the net effect of such externalities? Because the discrete entry mode choices are a proxy for the latent variable ***ownership***—degree of ownership (and implied control) retained by McDonald's in a foreign market—which has an ordinal character, I model entry mode choice as an ordered logit from

contracting to joint venture and finally to subsidiary. The underlying model of the decision of degree of ownership retained is:

$$\boldsymbol{ownership}_c = \boldsymbol{\alpha}\mathbf{m}_c + \boldsymbol{\beta}\mathbf{u}_c + \boldsymbol{\gamma}\mathbf{k}_c + \boldsymbol{\psi}\mathbf{z}_c + \boldsymbol{\varepsilon}_c \quad (1)$$

where ***m*** is a set of variables related to market potential, **u** is a set of variables related to market uncertainty, **k** is a set of variables related to cross-market externalities, and **z** is a set of control variables. The symbols, **α, β, γ,** and **ψ** signify the coefficient vectors on **m**, **u**, **e**, and **z** respectively. The subscript c denotes the country at time of entry. $\boldsymbol{\varepsilon}_c$ is a random error term. As ***ownership*** was unobservable for this study, I instead consider that ownership maps onto the observed variable, ***EntryMode*** defined earlier. The rule used to relate the latent variable, ***ownership***, to the observed variable, ***EntryMode***, is as follows:

$$\boldsymbol{EntryMode} = \begin{cases} 1 \Rightarrow \text{Contracting} & \text{if} \quad -\infty < \boldsymbol{ownership} < \tau_1 \\ 2 \Rightarrow \text{Joint Venture} & \text{if} \quad \tau_1 <= \boldsymbol{ownership} < \tau_2 \\ 3 \Rightarrow \text{Subsidiary} & \text{if} \quad \tau_2 <= \boldsymbol{ownership} < +\infty \end{cases}$$

The τ_1 and τ_2 represent cutoff values for the latent variable (***ownership***) that determine which observed variable (***EntryMode***) will be selected. I estimate the likelihood that McDonald's enters a given market with of each the three entry modes as follows:

$$\begin{aligned}
\Pr(\boldsymbol{EntryMode}_c=\text{Contracting} \mid \mathbf{m}_c, \mathbf{u}_c, \mathbf{k}_c, \mathbf{z}_c) &= \Pr(-\infty < \boldsymbol{ownership}_c < \tau_1 \mid \mathbf{m}_c, \mathbf{u}_c, \mathbf{k}_c, \mathbf{z}_c) \\
&= \Pr(-\infty < \boldsymbol{\alpha}\mathbf{m}_c + \boldsymbol{\beta}\mathbf{u}_c + \boldsymbol{\gamma}\mathbf{k}_c + \boldsymbol{\psi}\mathbf{z}_c + \boldsymbol{\varepsilon}_c < \tau_1 \mid \mathbf{m}_c, \mathbf{u}_c, \mathbf{k}_c, \mathbf{z}_c) \\
&= \Pr(-\infty - [\boldsymbol{\alpha}\mathbf{m}_c + \boldsymbol{\beta}\mathbf{u}_c + \boldsymbol{\gamma}\mathbf{k}_c + \boldsymbol{\psi}\mathbf{z}_c] < \boldsymbol{\varepsilon}_c < \tau_1 - [\boldsymbol{\alpha}\mathbf{m}_c + \boldsymbol{\beta}\mathbf{u}_c + \boldsymbol{\gamma}\mathbf{k}_c + \boldsymbol{\psi}\mathbf{z}_c] + \boldsymbol{\varepsilon}_c \mid \mathbf{m}_c, \mathbf{u}_c, \mathbf{x}_c, \mathbf{z}_c) \\
&= \Pr(\boldsymbol{\varepsilon}_c < \tau_1 - [\boldsymbol{\alpha}\mathbf{m}_c + \boldsymbol{\beta}\mathbf{u}_c + \boldsymbol{\gamma}\mathbf{k}_c + \boldsymbol{\psi}\mathbf{z}_c] \mid \mathbf{m}_c, \mathbf{u}_c, \mathbf{k}_c, \mathbf{z}_c) - \Pr(\boldsymbol{\varepsilon}_c < -\infty \mid \mathbf{m}_c, \mathbf{u}_c, \mathbf{x}_c, \mathbf{z}_c) \\
&= \Pr(\boldsymbol{\varepsilon}_c < \tau_1 - [\boldsymbol{\alpha}\mathbf{m}_c + \boldsymbol{\beta}\mathbf{u}_c + \boldsymbol{\gamma}\mathbf{k}_c + \boldsymbol{\psi}\mathbf{z}_c] \mid \mathbf{m}_c, \mathbf{u}_c, \mathbf{k}_c, \mathbf{z}_c) - 0 \\
&= \Pr(\boldsymbol{\varepsilon}_c < \tau_1 - [\boldsymbol{\alpha}\mathbf{m}_c + \boldsymbol{\beta}\mathbf{u}_c + \boldsymbol{\gamma}\mathbf{k}_c + \boldsymbol{\psi}\mathbf{z}_c] \mid \mathbf{m}_c, \mathbf{u}_c, \mathbf{k}_c, \mathbf{z}_c) \\
&= F(\tau_1 - [\boldsymbol{\alpha}\mathbf{m}_c + \boldsymbol{\beta}\mathbf{u}_c + \boldsymbol{\gamma}\mathbf{k}_c + \boldsymbol{\psi}\mathbf{z}_c])
\end{aligned}$$

and likewise:

$$\begin{aligned}
&\Pr(\boldsymbol{EntryMode}_c=\text{Joint Venture} \mid \mathbf{m}_c, \mathbf{u}_c, \mathbf{k}_c, \mathbf{z}_c) \\
&\quad = \Pr(\tau_1 \le \boldsymbol{ownership}_c < \tau_2 \mid \mathbf{m}_c, \mathbf{u}_c, \mathbf{k}_c, \mathbf{z}_c)
\end{aligned}$$

$$= F(\tau_2 - [\boldsymbol{\alpha}\mathbf{m}_c + \boldsymbol{\beta}\mathbf{u}_c + \boldsymbol{\gamma}\mathbf{k}_c + \boldsymbol{\psi}\mathbf{z}_c]) - F(\tau_1 - [\boldsymbol{\alpha}\mathbf{m}_c + \boldsymbol{\beta}\mathbf{u}_c + \boldsymbol{\gamma}\mathbf{k}_c + \boldsymbol{\psi}\mathbf{z}_c])$$

$$\Pr(\textit{EntryMode}_c = \text{Subsidiary} \mid \mathbf{m}_c, \mathbf{u}_c, \mathbf{k}_c, \mathbf{z}_c)$$

$$= \Pr(\tau_2 \leq \textit{ownership}_c < +\infty \mid \mathbf{m}_c, \mathbf{u}_c, \mathbf{k}_c, \mathbf{z}_c)$$
$$= 1 - F(\tau_2 - [\boldsymbol{\alpha}\mathbf{m}_c + \boldsymbol{\beta}\mathbf{u}_c + \boldsymbol{\gamma}\mathbf{k}_c + \boldsymbol{\psi}\mathbf{z}_c])$$

The selection of $F(\cdot)$ is made based on the assumed distribution of the error term. As is most common, I assume for this analysis that the errors follow a logistic distribution where $\Pr(\boldsymbol{\varepsilon} \leq \boldsymbol{\alpha}\mathbf{m}_c + \boldsymbol{\beta}\mathbf{u}_c + \boldsymbol{\gamma}\mathbf{k}_c + \boldsymbol{\psi}\mathbf{z}_c) = \mathbf{1/(1+e^{-[\alpha mc + \beta uc + \gamma kc + \psi zc]})}$.

Thus, I seek parameter estimates for $\boldsymbol{\alpha}, \boldsymbol{\beta}, \boldsymbol{\gamma}, \boldsymbol{\psi}$, τ_1, and τ_2 that make it most likely that McDonald's would have selected the actual entry modes that it has used. This model examines the effect of an independent variable on the likelihood of being above a particular cutoff value, in this case τ_1 or τ_2. For McDonald's then, two likelihoods are calculated: (1) the likelihood of using joint venture or subsidiary versus contracting and (2) the likelihood of using a subsidiary versus contracting or joint venture. As an example, the log likelihood function can be depicted for (1) as follows[7]:

$$L1 = \Pi\, [1/(1+e^{-(\tau_1 - \mathbf{x}_c\boldsymbol{\omega})})]^{\text{mode="contracting"}} * [1-(1/(1+e^{-(\tau_1 - \mathbf{x}_c\boldsymbol{\omega})}))]^{\text{mode="jv or subsidiary"}}$$

$$\text{or } \Pi\, [1/(1+e^{-(\tau_1 - \mathbf{x}_c\boldsymbol{\omega})})]^{\text{mode="contracting"}} * [1/(1+e^{(\tau_1 - \mathbf{x}_c\boldsymbol{\omega})})]^{\text{mode="jv or subsidiary"}}$$

$$\text{Log L1} = \sum \log\, [1/(1+e^{-(\tau_1 - \mathbf{x}_c\boldsymbol{\omega})})] - \sum \log\, [1/(1+e^{(\tau_1 - \mathbf{x}_c\boldsymbol{\omega})})]$$

Note that in the preceding equations $\mathbf{x}_c\boldsymbol{\omega}$ replaces $\boldsymbol{\alpha}\mathbf{m}_c + \boldsymbol{\beta}\mathbf{u}_c + \boldsymbol{\gamma}\mathbf{k}_c + \boldsymbol{\psi}\mathbf{z}_c$ for notational convenience. The $\boldsymbol{\omega}$ vector under standard ordered logit models is constrained to be identical across the two likelihood functions.[8]

---

[7] Note that I have depicted only the log likelihood function for (1) but the same applies to (2).

[8] I test the proportional-odds assumption with both a Likelihood Ratio test and a Wald test. The LR test compares the equivalence of the log likelihood from the ordered logit model to that obtained from pooling two binary models estimated with logit, adjusting for the correlation between binary outcomes related to $\textit{ownership} \leq \boldsymbol{\tau_1}$ and $\textit{ownership} \leq \boldsymbol{\tau_2}$. The LR test yielded a chi2(15)=16.81 with Prob>chi2=0.3302, indicating that the parallel regression assumption can be rejected at the 0.33 level. The Wald test for the ordered logit model, developed by Brant (1990), compares the parallel regression

In Table 6 below I provide regression results from alternative ordered logit models.[9] Model 1 includes merely country-specific factors and excludes cross-market externalities altogether. Models 2 and 3 introduce cross-market externalities and respectively OLS and duration estimates of market attractiveness, ***MarketAttract***. As the OLS model yields 83 observations and is also negatively signed, I employ the OLS estimates of ***MarketAttract*** in Model 4. In addition, I interact cross-market externalities with the different types of market uncertainty. This is done so as to examine whether such externalities alter McDonald's choice of entry mode when facing market uncertainty.

assumption by examining the coefficients on each variable individually. This test identifies the source of the violation as largely due to the variables ***ForeignTrade/GDP***, ***ForeignMarket-Years***, ***Population***, ***GDP/Cap***. While I explored the use of a generalized ordered logit, estimates were clearly invalid as they assumed impossible values. Consequently, I retain the ordered logit in spite of its violation here. One aspect of ordered logit models is that they are highly fragile. As such, I will be exploring the use of the multinomial logit in moving this research forward.

[9] See Appendix 1 for raw data on the 72 included countries.

Table 6: Ordered Logit Models

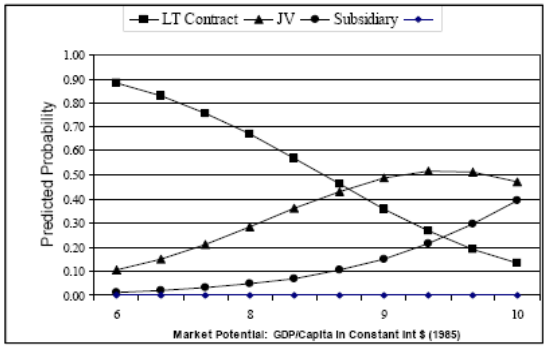
	(1)	(2)	(3)	(4)
	Entry Mode	***Entry Mode***	***Entry Mode***	***Entry Mode***
ForeignMarket-Years		0.398	0.632	-0.229
		[0.337]	[0.479]	[0.603]
RegionMarket-Years		-0.319	-0.491	-0.324
		[0.267]	[0.314]	[0.273]
MarketAttract		-0.037		-0.061
(OLS)		[0.089]		[0.092]
MarketAttract			-2.205	
(Gompertz Duration)			[1.405]	
EconRisk X RegionMarket-Years				-0.009
				[0.009]
ExchgeRateRisk X ForeignMarket-Years				0.006
				[0.011]
PoliticRisk X ForeignMarket-Years				1.59
				[1.215]
GDP/Cap	1.142	0.656	3.325	0.921
	[0.618]	[0.798]	[2.295]	[1.024]
Population	0.804	0.63	1.875	0.724
	[0.386]*	[0.368]	[1.108]	[0.435]
PopGrowth	-0.654	-0.819	-1.409	-0.819
	[0.312]*	[0.345]*	[0.528]**	[0.419]
EconRisk	-0.007	-0.006	-0.002	0.035
	[0.007]	[0.007]	[0.007]	[0.042]
ExchgeRateRisk	0.007	0.004	0.006	-0.036
	[0.005]	[0.006]	[0.007]	[0.066]
PoliticRisk	0.375	0.575	4.218	-8.442
	[1.545]	[1.599]	[3.754]	[7.143]
ForeignOpenness	-0.053	-0.06	0.196	-0.088
	[0.106]	[0.120]	[0.253]	[0.123]
ForeignTrade/GDP	0.013	0.013	0.041	0.012
	[0.007]	[0.007]	[0.022]	[0.008]
USTrade	-0.634	-0.451	-0.076	-0.536
	[0.322]*	[0.355]	[0.492]	[0.403]
HeadquartersDistance	-0.077		-2.664	
	[0.611]		[1.734]	
Observations	72	72	52	72
LR Test	34.18	35.87	27.2	38.89

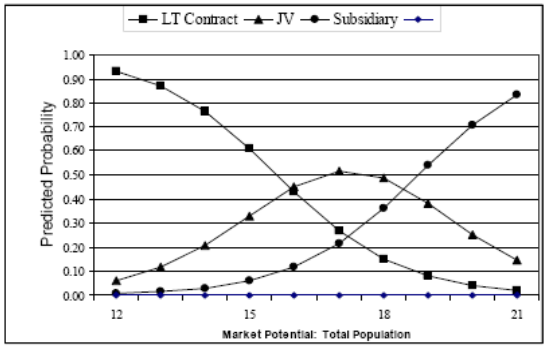
Standard errors in brackets; * significant at 5%; ** significant at 1%

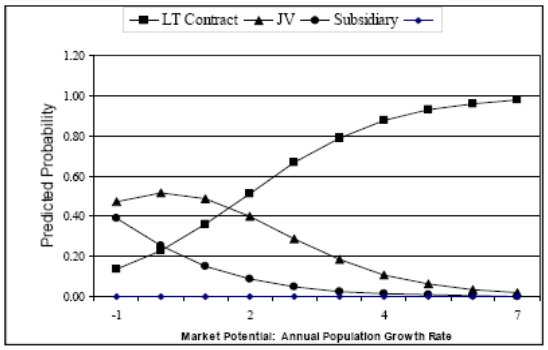
For the interaction terms, calculation of the partial effect from changing variable levels is not directly provided within Table 6. The partial effects vary with the level of the interacted variables. For ***ForeignMarket-Years***, ***RegionMarket-Years***, ***ExchgeRateRisk***, ***EconRisk***, and ***PoliticRisk***, I provide below the partial effect of each variable on McDonald's foreign market entry mode choice when setting the interacted variable at its mean observed value.[10] In Chart 3, I explore the predicted probabilities of each mode across the full range of values observed for the market-specific independent variables, setting all other variables at their means.

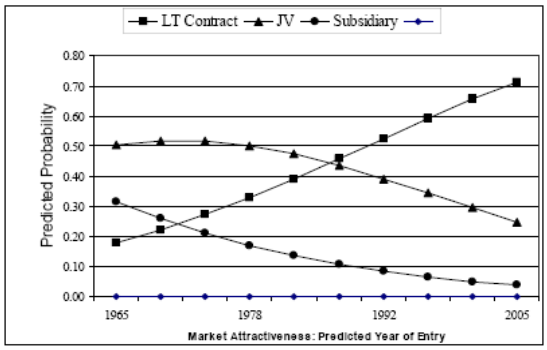
[10] See Appendix 2.

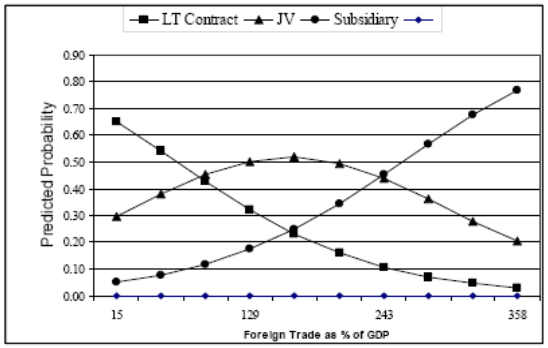
Figure 2: Probability Curves of Independent Variables

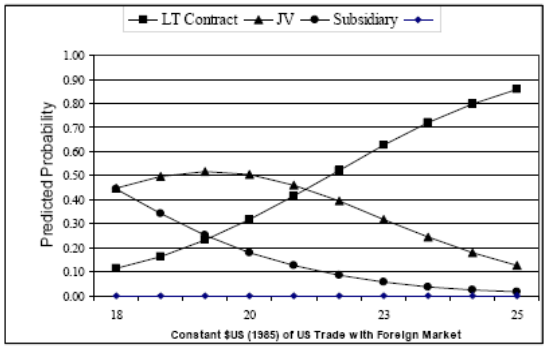


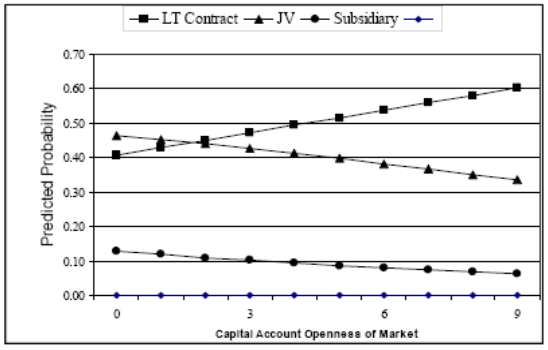












In Table 7, I consider how successful the model is at predicting McDonald's foreign market entry mode choice. In 44 out of 72 instances the model accurately predicted the entry mode adopted. Pure chance would have yielded accurate predictions of each category 33% of the time. For contracting, the model accurately predicts in 50% of the entries (10 out of 20); for joint ventures the model accurately predicts 65% of the entries (17 out of 26); for subsidiaries the model accurately predicts 65% of the entries (17 out of 26).

Table 7: Model Success in Predicting McDonald's Entry Mode

		Predicted Mode of Entry			
		Contract	JV	Subsidiary	Total
Actual Mode of Entry	Contract	10	10	0	20
	JV	3	17	6	26
	Subsidiary	1	8	17	26
	Total	14	35	23	72

Clearly, the findings are inconclusive because of insufficient information contained within the 72 data points. ***Population*** and ***PopGrowth*** were the only two statistically significant coefficients within any of the models estimated. One possible explanation may relate to the methodology of measuring growth as the percent of market size. Smaller markets may exhibit higher levels of growth (in percentage terms) and thus this measure may actually be capturing a phenomenon related to current market size rather than potential. Unfortunately, this explanation receives little support when

observing that ***PopGrowth*** has a -0.21 correlation coefficient with ***GDP/Cap*** and a 0.15 correlation coefficient with ***GDP/Cap***.

Rather than try to interpret findings from something which is inconclusive, I recognize that to advance this research I require additional data. I intend to gather such data so as to obtain conclusive findings relating cross-market externalities to foreign market entry mode.

2.e. Next Steps

Unfortunately, data limitations resulted in inconclusive findings for this study. While discouraging, I remain convinced of the value of pursuing this line of research in the future. To date, no study has exploited firm-specific longitudinal data to control for market attractiveness when trying to identify the impact of prior experience on foreign market entry mode choice. Most prior research has instead employed merely a cross-sectional analysis of firms with a single measure of age at time of entry. This approach confounds these two effects and cannot convincingly distinguish among the two. This is a problem if we are to determine the relative merits of both the TCE and internationalization views relating to foreign market entry mode. I believe that exploiting a competing risks model on such a data set would methodologically make a meaningful contribution by considering jointly the issue of when and how firms enter foreign markets. To my knowledge, entry studies have either looked at when or how firms enter foreign markets, assuming that these two decisions are independent. However, this seems a questionable assumption when one considers that more direct experience may provide firms valuable knowledge to exploit during future entries. Consequently, earlier entries may well be accompanied by greater ownership rather than less, as argued by the

internationalization view. An additional dimension to introduce into this analysis would be the ease with which entry mode of governance might change over time. Within the limited data set that I have compiled on McDonald's such changes arise frequently enough to warrant further investigation.

Through conducting this study, I came to appreciate the importance of not stopping at foreign market entry but instead to look beyond to what happens within foreign markets after entry. As I further explored research on firm internationalization, it became clear that prior work has predominantly examined when and how entry occurs. In the two subsequent studies within this dissertation I examine first the pattern of expansion within foreign markets after entry and then how firms develop and exploit knowledge in foreign markets.

CHAPTER 3
BEYOND ENTRY: EXPANSION WITHIN FOREIGN MARKETS

3.a. Introduction

An extensive body of literature on firm expansion beyond domestic borders in international business has focused on entry, specifically the issues of timing and mode of entry, where the latter typically takes the form of exporting, licensing, joint venture or FDI.[11] While this literature has provided useful insights regarding where and how firms enter foreign markets, it treats entry as its own end rather than the beginning of a firm's foreign market involvement. This focus on entry may stem in part from the frequent use of manufacturers as the empirical setting for analyzing expansion; a manufacturer can enter a foreign market at the outset with a plant large enough to service the needs of the market for some time to come. In this context, entry rightly may be seen as the end as well as the beginning of a firm's foreign market investment. But as the U.S. becomes an increasingly service-based economy, understanding how service firms expand abroad becomes important. And the reality is that service firms typically enter foreign markets with one or a few locations and then expand their geographic coverage of the foreign market over time in their quest for customers. In that case, when and how these firms develop additional locations in various markets becomes potentially more informative when it comes to understanding firms' international activities than the choice of timing and mode of entry for the initial location(s).

[11] See e.g. Hymer 1976; Kobrin 1976; Davidson 1983; Anderson & Gatignon 1986; Teece 1986; Dunning 1988; Gatignon & Anderson 1988; Kogut & Singh 1988; Barkema, Bell & Pennings 1996; Buckley & Casson 1998; Mitra & Golder 2002.

In this study I use the empirical context of fast-food franchising to gain a richer understanding of international expansion by service firms within as well as across foreign markets. I focus on the expansion of the firm—McDonald's—credited with introducing the concept of franchising itself to many of the markets where it operates. As McDonald's has expanded throughout much of the world, looking back at its expansion pattern is of particular interest; such a perspective enables us to uncover what attracts a firm to pursue particular market opportunities earlier than others that it nonetheless subsequently does pursue. I use data on the number of outlets that McDonald's operated each year in each country since its first foray outside the U.S., into Canada, in 1967. I examine how firm-specific characteristics (such as a firm's international experience) and market-specific characteristics (such as population or purchasing power) previously identified as important to firm decisions regarding foreign market entry timing relate to observed post-entry growth in outlet counts by McDonald's within foreign markets. Moreover, I can explore how governance mode—subsidiary, joint venture, master franchising—adopted by the firm to oversee operations within a market influences the rate of subsequent outlet development. Through this study, I seek to assess which factors influence the firm's market entry decision, which factors influence the firm's post-entry expansion decisions, and how closely the two are related. Consideration of post-entry factors seems notably absent from existing international business research and accounting for their influence might well lead to an inversion in the relative attractiveness of entering one market earlier than another. As such, an understanding of these expansion factors is not only important in its own right but also when the researcher's interest is exclusively the entry decision.

The chapter is organized as follows. In the next section, 3.b., I briefly summarize literature on foreign market entry and identify hypotheses to be empirically tested. Section 3.c. describes the data and McDonald's international expansion. Section 3.d. presents my empirical specification and findings. Section 3.e. concludes.

3.b. Overview of Literature and Conceptual Framework

I ground my study theoretically within economics. Economic theory holds as a core precept that firms should pursue positive net present value projects whenever and wherever they arise. Such projects often entail developing and adopting new technologies or diversifying existing product portfolios. However, the "project" may also take the form of geographic development and diversification that expand a firm's physical presence across a market. Toivanen and Waterson (2005) for example show how McDonald's and Burger King pursued geographic expansion within the UK, starting from London. Herein, my focus is on geographic expansion globally across and within numerous foreign markets.

Following the above precept, if firms are risk neutral, face no capital or managerial resource constraints and experience no gains from learning, then they should expand into and within all foreign markets affording positive net present value opportunities.[12] However, if firms face resource constraints or there is option value in accumulating information about a market opportunity gradually (there are gains from learning about a market), then the same economic theory suggests that firms will

[12] I make the basic assumption throughout this analysis that firms—particularly McDonald's—is risk neutral in its decisions.

maximize profits by allocating resources across markets in a way that sequentially exploits better opportunities earlier than worse ones.[13]

Under this scenario, foreign markets in which resource constraints are lower afford better opportunities for firms. While the availability and level of human capital is clearly important when considering resource constraints within a country, researchers have increasingly turned their attention to examining the influence of a country's institutional and political characteristics on efficient resource allocation, and the impact of such institutional and political characteristics on foreign market expansion.[14] Institutional and political factors that affect the capacity of the foreign firm to appropriate the returns from its activities reduce the firm's *a priori* incentives to invest. Also, a number of studies in finance have established a strong causal effect of the quality of a country's legal system on financial development.[15]

Likewise under this scenario, foreign markets that are similar, culturally or geographically, to previously entered markets may afford firms better opportunities than markets that are dissimilar because the firms' prior experience can make it easier, and therefore less costly, to respond to familiar market demand or supply conditions. Put differently, the firm's assessment of the probability of success in such similar markets may well be higher than for dissimilar markets, making similar markets more attractive even if along other dimensions (e.g. population or purchasing power) these markets are less attractive. Stulz and Williamson (2003) have suggested that cultural characteristics

[13] For example, standard economic theory implies that a monopolist selling a fixed quantity of output will maximize profits by allocating units of output across markets to equalize marginal revenue across markets. Similarly, in finance, firms with limited resources invest in the highest NPV projects.

[14] Refer to Wei (2000), Papaioannou (2004).

[15] See notably LaPorta et al. 1997, 1998, 1999.

(religion, societal composition, language) may explain financial flows around the world even better than legal quality proxies. Support for the effect of geographic similarity is provided within international trade literature where the "gravity" model uses geography and information asymmetries to explain quite successfully the extent of trade not only in goods but also in asset flows.[16] Of course, the fundamental drivers of market potential – here again population and purchasing power – continue to influence the expected net present value of market opportunities and thus firms' decisions concerning where to expand abroad.

Internationalization theory has emerged as a prominent theory within international business research. Relying heavily upon the behavioral assumption of uncertainty avoidance, this body of theory argues that firms minimize the uncertainty associated with going abroad by doing so only incrementally, starting with modes of entry that involve little commitment, such as exporting, and only increasing their involvement in those markets where they have found success (Johansen & Vahlne, 1977 and 1990). This view of international expansion is not inconsistent with the options value approach, where firms also commit resources only gradually (see Dixit, 1989) and thus are able to progressively update their evaluation of different opportunities. However, internationalization theory also seems to suggest that firms would expand abroad only after exhausting opportunities within their home market, then enter markets most "familiar" to them (namely markets similar culturally or in close geographic proximity to those already entered), and that firms will exhaust opportunities in each entered market

[16] See for example Portes and Rey (forthcoming) on equity, Mody, Razin, and Sadka (2003) on FDI, and Buch and DeLong (2004) on bank flows.

before proceeding into new markets.[17] In short, profit maximization seems to take a back seat to risk aversion. This stands in stark contrast to traditional economic theory which generally holds the view that firms can largely diversify away most types of risk, and as such the importance of risk itself is effectively eliminated.

Contrary to a manufacturing firm whose options include exporting, a retail firm such as McDonald's has no choice but to go abroad, where the customers are, if it is to sell its product outside its home market. Additionally, such a firm must expand the number of outlets abroad if it is to reach the geographically dispersed customers there. This reality makes it possible for us to observe not only the time at which McDonald's enters a given foreign market but also to track the extent and timing of its expansion within each foreign market over time. As such, I can assess whether this firm pursues principally markets that are similar to those in which it has already entered or whether it pursues those opportunities across the system that afford the highest net present value opportunities.

While McDonald's cannot export its product, it can choose among different modes of operation in each market, some of which involve a higher degree of

[17] Eriksson *et al.* (1993) provides an overview of the empirical research that examines whether manufacturing firms increase their involvement in foreign markets gradually over time, moving from low commitment methods of selling abroad, such as exports, to high commitment methods involving ultimately foreign direct investments. The empirical literature overall does not support this gradual involvement hypothesis. A number of empirical studies, however, support the idea that firms invest first in markets that are nearby and whose populations are similar to the home market culturally. Most of these studies are based on small samples and are mostly descriptive in nature (*e.g.*, Johanson and Wiedersheim-Paul, 1975; Loustarinen, 1980). Three studies involve larger-sample analyses: Davidson (1980) examines pairwise entry frequencies of foreign direct investment for a sample of 934 individual new products introduced by fifty-seven U.S. firms in the period 1945-76. He concludes that "firms in the initial stage of foreign expansion can be expected to exhibit a strong preference for near and similar culture." (p. 18). Similarly, Nordström and Vahlne (1994) find a positive rank correlation between measures of psychic distance from Sweden and mean rank of entry for their sample of Swedish firm investments. Benito and Gripsrud (1992) and Pedersen and Shaver (2000), on the other hand, find no support for the hypothesis that expansion first occurs in countries that are culturally closer to the home country.

commitment of resources than others. In particular, it can open a subsidiary that franchises directly, or enter into a joint venture with a local partner, or establish a master franchising arrangement whereby the master franchisee owns and operates all the outlets in his or her territory or finds franchisees to do the same. While the level of investment that McDonald's commits to these markets differs across these different governance modes, in all cases McDonald's exerts significant control over the number of outlets and the growth in the number of outlets in each market. Consequently, in what follows, I assume that it internalizes the cost of expansion to a large extent – though potentially to varying degrees depending on governance within each market - and that it gets to set the expansion path within as well as across all markets.[18]

While internationalization theory implies that familiarity will be the driving factor in determining where McDonald's will expand abroad, a prediction I address empirically below, it is useful to discuss further other factors that might enter into a firm's decision to expand abroad. The economic literature on firm entry has focused explicitly on the importance of sunk costs in determining the number of firms that can operate and thus compete at a point in time in a market (e.g. Bresnahan and Reiss, 1987). While Bresnahan and Reiss consider homogeneous firms, this literature also has examined how firm heterogeneity affects the likelihood of entry (Berry (1992), Scott Morton (1999)). Specifically, the typical model assumes that heterogeneous firms decide simultaneously

[18] For example, while McDonald's may not fully internalize the cost of expansion in a master franchise context, such a contract usually stipulates a development schedule that states the number of outlets to be opened at different points in time. In that sense, McDonald's can still control the expansion path in such markets. Moreover, as tight development schedules impose higher costs on the master franchisee, they will not be willing to pay as much for a contract that requires them to expand very rapidly relative to one where they can expand more slowly. As a result, McDonald's potentially internalizes the cost of rapid development in master franchise contexts as much as they do under joint venture or even direct franchising.

whether to enter and incur the sunk costs associated with entry. Firms then compete in a single market, and the resulting combination of production levels and prices determine their net profits in this new market.

My setting differs from that of these studies in that rather than examining multiple firms deciding whether or not to enter a given market, I consider a single firm deciding whether to enter various markets. I follow this literature, however, in assuming that McDonald's faces sunk entry costs in each market. These costs include the cost of learning about the rules that govern each new market and about the customers in each market. It would also include the cost of advertising the brand and making itself and its product known in this new market.[19] Of course, such costs may well be lower in markets that are culturally similar or physically proximate to the markets that the firm already operates in at any given time. Also, because of the limited managerial resources available at the Chicago head office at a point in time, I assume that these costs are convex in the distance – geographic or cultural or both – weighted number of countries entered into in a given time period. This convex cost function will make it more profitable not to enter all markets at once.[20]

Beyond the cost of entering into a new foreign market, I also attach a sunk cost of entry to each new outlet that the firm establishes in a given country.[21] This assumption

[19] It has been suggested that in some markets, McDonald's has purposely kept supply low to generate queues and thus increase customer interest and perception of quality. The cost of doing this is the lost profit that the firm would have obtained if it operated more outlets faster in these markets. Such a cost would also be part of the sunk cost of entry into these markets.

[20] See Pedersen and Shaver (2000) for an argument that the first entry abroad is particularly costly, while those that follow are less so. They derive and find support for the hypothesis that the time to first entry will be larger than the time to second entry. They also find that the time to follow-up entry does not differ from the time to second entry significantly.

[21] One might also reasonably assume that there is a cost of opening outlets that operates at the level of the chain as a whole, across markets, that is a cost function $C = \zeta(\Sigma_j Outlets_{jt})$. However, empirically, there is

represents the strain on local resources when many outlets are opened at once in the market. For example, it is costly to find enough real estate experts and to analyze large numbers of sites to identify a large number of good locations for new outlets. It is also time consuming and costly to identify and train the requisite number of franchisees, managers, and employees to staff numerous outlets. These limits in turn impose a constraint on the chain's growth in any given market in a given time period.

The combination of the market level and outlet level entry costs will lead to slow gradual growth, across markets and within each market, a pattern supported by the data in Figures 3 and 4 which show respectively the evolution in the number of U.S. and foreign outlets over the history of the firm, and the evolution of the number of outlets in each of McDonald's five main markets. These figures also already suggest that the firm begins operating in new markets much before all profitable opportunities to operate in its existing set of markets are exhausted, as illustrated by the fact that much growth occurs in markets already entered even after entry into new markets [22]

large variation in the number of outlets opened in total by the chain each year, so there does not appear to be an obvious cross-market constraint or cost operating at this level. Moreover, discussions with industry representatives suggest that markets are developed relatively separately - for example, master franchise development schedules are set up independently from those arranged for other markets.

[22] Linn (2004) for example reports that Starbucks plans to triple its store count from the current 8000 to 25,000 worldwide long long-term. At this time, it is expanding at a rate of about 3.5 new stores per day, which requires that the firm, whose employees already number around 80,000, hire 250 new employees a day. At this rate, it will take Starbucks more than a decade to achieve its current long-term goal.

Figure 3: McDonald's Expansion 1995-1999

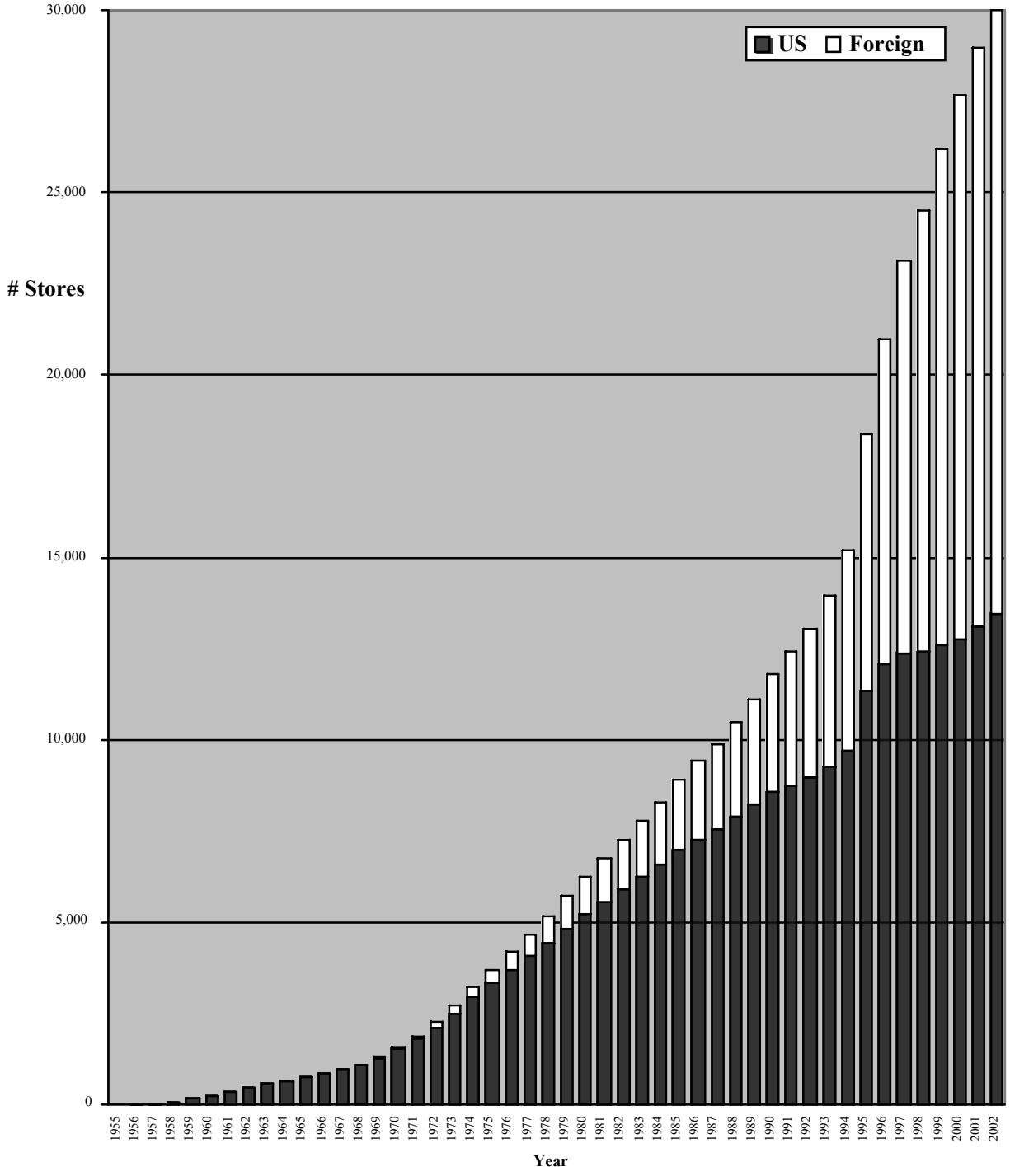
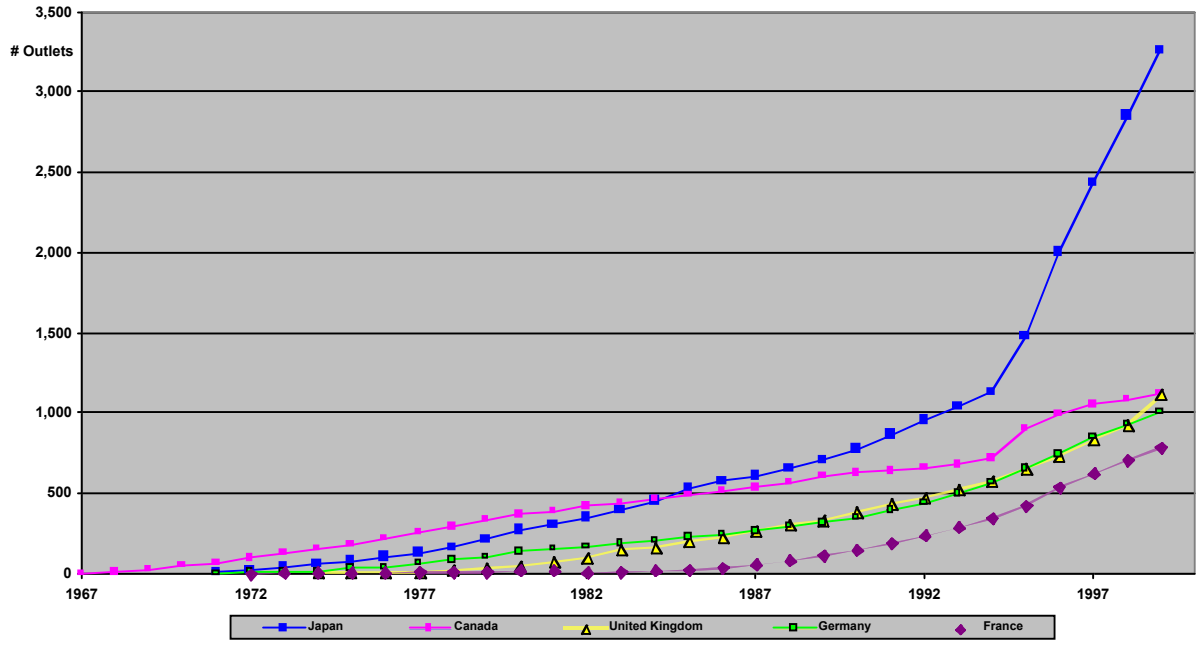


Figure 4: McDonald's Expansion – Five Largest Markets



While McDonald's faces costs of expansion into new and within existing markets, it is able to assess the long-term prospects of different markets and it is on this basis that, according to economic theory, it would decide when to enter a new market. Specifically, assuming that service firms follow manufacturing trade patterns, the international trade literature suggests that McDonald's will initially open outlets in higher-income countries and move into lower-income countries later on (Vernon 1966 and Grossman & Helpman 1991). Also, just like I see in manufacturing, the firm's evaluation of each market will determine its mode of entry into these markets.

Suppose then that the demand for McDonald's product in any given market j at time t is given by:

$$Q_{jt} = f(Z_{jt}, p_{jt}) + u_{jt}$$

where the Z_{jt} are a series of market characteristics such as population and income, the u_{jt} is random noise that makes it impossible to precisely predict demand, and p_{jt} is the price charged for the product in market (country) j at time t.[23] Given price, and holding the size of each McDonald's constant, this demand implicitly defines the optimal number of outlets that McDonald's would find optimal to have in this market at time t. I use N_{jt}^* to represent this optimal number of restaurants. Note that I allow this optimal number of restaurants to vary over time as the market evolves over time as well.

The expected profit from operations in a specific new market at time t if all N_{jt}^* outlets were opened at once would be

$$\Pi_{jt} = N_{jt}^* (\pi_j - F(N_{jt}^*))$$

where π_j is the present value of each outlet's profit over the life of the restaurant and $F(N_{jt}^*)$ is the sunk cost of establishing all these restaurants at once. Of course, if all outlets are not opened at once, the total cost F would be lower. However, profits generated in the market also will be lower as some outlets would then only generate profits further in the future. Comparing the marginal benefit of one more restaurant to the marginal cost of establishing one more, McDonald's will determine the optimal number of outlets to be opened in this market each period. The net present value of the profits generated by this expanding set of outlets over time minus the marginal cost of entering this specific market at time t would represent the net value of entering this market at time t. Economic theory suggests that at each period t, the firm would rank markets not yet entered based on its expectation of net present value overall for each market, and enter all those for which the net present value of expected profits are above

[23] Note that the demand for franchises in each market is derived from the demand for the firm's product. In that sense, even if the firm mostly sells franchises, it cares about the demand for its products.

the incremental cost of entry. Of course, at any given time, the expected profits from projected outlets in a particular market need not be positive. In those cases, the firm will delay entry until market conditions improve sufficiently so that the profit potential outweighs entry costs. Thus, entry into very low demand markets may be delayed significantly.

Assuming similar sunk costs of opening outlets within the different markets, everything else constant, McDonald's net expected profits from entry will be higher the larger the expected number of stores to be opened in a market and the lower the sunk cost of entry into a given market. Thus, in any given period, McDonald's will first enter those remaining markets with the highest expected demand, namely markets where income (assuming, of course, that fast-food is a normal good) and population for example are high, and markets that are more similar culturally if this means that local customers are most likely to appreciate the firm's product.

Going beyond entry, however, what does economic theory imply when it comes to how McDonald's should allocate resources to grow within markets? One way to think about the process of expansion within a market is as a series of entry decisions within specific submarkets (Toivanen and Waterson, 2005). The convex cost function for new units then constrains the number of outlets to open in each market in any given period. Here again outlets or submarkets can be ranked in decreasing order of expected sales, and all those for which expected profits are above the incremental sunk cost associated with opening a new outlet will be worth opening at time t. This implies that McDonald's would open those outlets in the most profitable submarkets first. It also implies that McDonald's will open more outlets faster in high demand countries.

In many of the countries where McDonald's now operates, it brought along not just one but two new concepts: its product – the hamburger, or fast-food itself – and franchising. As a pioneer, it faced significant uncertainty, not knowing how the population would react to its product offering. Hence demand could not be predicted with as much precision (the variance of u in (1) is larger) when the firm had no experience in the market.[24] This implies that there is option value in not developing a large number of outlets all at once but rather taking some time to learn about customers, tailoring products, and advertising to increase demand in each market. The cost of waiting will be larger, however, in high expected demand markets. In other words, both an assumption of convex sunk cost and the option value approach to this problem imply that the number of outlets will grow more rapidly the larger the expected demand in the market.

3.c. The Data

The panel data set I use is constructed from McDonald's Corporation annual reports which together contain information on the number of stores that the company operates in each country in each year since the company's foundation in 1955. In addition, I gathered information on the characteristics of as many markets/countries as I could, irrespective of whether McDonald's operated outlets in these by the end of the study period, in 1999.[25] My data are yearly since 1967 as this is when McDonald's opened its first outlet outside of the United States - in Canada. My goal was to capture

[24] See Caplin and Leahy's (1998) model of search with information externalities.

[25] Appendices 3 and 4 respectively show the list of markets that McDonald's operates in that are included in the data, and the set that I had to exclude for lack of data. I made every effort to find all the needed data for all markets. Appendix 3 shows that the jurisdictions excluded from the data are typically small, and often island, markets.

those market characteristics that influence expected demand for McDonald's in each market as well as the level of sunk costs to the extent possible. Thus, I obtained data on GDP per capita, population, the proportion of the population living in urban centers, the surface area of the country, the distance of each capital from Chicago, where McDonald's headquarters is located, and so on. Table 8 shows the details of all these variables, their exact definitions and the sources I used. Table 9 gives descriptive statistics for all these variables across all the foreign markets over the period from 1967 to 1999 first for the overall sample (irrespective of whether McDonald's had in fact any outlets within a given market at the time), and then focusing on those markets that McDonald's was in fact present in by 1999.

As one of my goals is to examine whether McDonald's expands geographically only after saturating markets, it is useful to consider this issue using my full data set instead of only those few markets that McDonald's went in early on, as per Figure 4. Table 10 shows the number of new markets in which McDonald's has opened outlets during each year after its first foreign market entry in 1967, into Canada.[26] The table also shows the number of outlets the firm had in the markets it was already in by that time, and the number of outlets it added in year t to those markets. The last three columns in the table show the equivalent information but for the markets that McDonald's enters at time t. Consistent with the conclusions I drew from Figure 4, Table 10 shows that the bulk of the growth occurs in the markets that McDonald's has previously entered despite the fact that it is entering many additional markets at any given time. Thus, the data

[26] It also went to Puerto Rico that year. For the list of countries that McDonald's operates in by 1999 and the year of entry in each case, see Appendix 3.

rejects the notion that a firm such as McDonald's saturates the markets it is already in before exploiting opportunities in new markets.

Table 8: Variable Definitions and Sources

Variable Name	Description	Units	Measure	Source(s)
Outlets	# outlets in country	Outlets	Total year-end number of outlets in country.	Annual Reports
Outlet Growth	Outlet growth from preceding year	None	$Log(outlets_t) - Log(outlets_{t-1})$	Annual Reports
yr_in_mkt	Year in market (entry year=1)	Years	First year equals 1, 2nd year equals 2, …	Annual Reports
Calendar_yr	The calendar year for the period t	Calendar Year	Spans from 1967 through 1999	
Population	Total country population	Millions of people		USCB
Urban_rate	Proportion of total population residing in urban settings	None	# People in urban settings divided by total population of the country	WDI, PWT,WB
Gdpcap	Real GDP per capita	$US 1995		WDI, PWT,WB
Distance	Distance from firm headquarters	Kilometers	Great circle distance between Chicago and country capital	
risk_gdpcap	Variability of detrended GDP/capita as a proportion of average GDP	None	Mean squared error from regression of real local currency GDP per capita on calendar year from t-6 to t-1 divided by mean GDP per capita over same period	WDI, PWT, WB
risk_USxchg	Variability of local currency and US $ exchange rate	None	Standard deviation of exchange rate between t-6 to t-1 divided by average exchange rate over same period. The result is then divided by 1,000 to appropriately scale the variable.	WDI, PWT, IMF
Polcon	Index of political consistency	(0, 1) with 1= most consistent	Henisz (2000) "polconiii" measure. Refer directly to article for details underlying calculation of index.	Henisz' Web site†
Competitors	# of Major US Burger Chains in Country	{0,2}	Counts whether Burger King and Wendy's present in country. If both there, then =2, one, then =1.	AR, SEC, Press
East Block	Dummy variable for Country in East Block	(0,1)	Previously part of Soviet Controlled countries.	WDI
Trade/gdp	Openness of country to foreign trade	None	Total (exports + imports) divided by GDP for a country	WDI, PWT,WB
foreign_mkts_in	Number of foreign markets at year end	Countries		Annual Reports
exper_lang	Total Outlets in Markets w/Same Language	Outlets	Total store count within other countries that speak the same language	Annual Reports, WB

†: WWW-MANAGEMENT.WHARTON.UPENN.EDU/HENISZ/

Table 9: Descriptive Statistics (1967-1999) Excluding US

	Analysis of Entry Decision					Analysis of Post-Entry Expansion				
Variable	Obs.	Mean	Std. Dev.	Min	Max	Obs.	Mean	Std. Dev.	Min	Max
outlets	4,481	21.3	121.0	0	3,258	1,071	89.1	235.1	1	3,258
outlet_growth						1,071	0.29	0.35	-1.61	2.89
yr_in_mkt	4,481	2.6	5.9	0	33	1,071	10.30	7.75	1	33
Calendar_yr	4,481	1984	9.56	1967	1999	1,071	1990	7.78	1967	1999
Population	4,481	31.34	110.95	0.15	1,252.8	1,071	42.71	131.69	0.26	1,253
Urban_rate	4,479	0.47	0.25	0.02	1.00	1,071	0.69	0.18	0.18	1.00
Gdpcap	4,345	5,178	8,322	0	45,952	1,071	12,674	11,076	350	45,952
Distance	4,415	5,889	2,136	437	9,918	1,071	4,850	2,318	437	9,849
risk_gdpcap	4,222	0.03	0.04	0.0010	0.88	1,071	0.025	0.043	0.001	0.875
risk_USxchg	4,284	0.049	0.081	0	0.547	1,064	0.0014	0.0095	0	0.2019
Polcon	4,385	0.18	0.21	0	0.71	1,071	0.36	0.19	0	0.71
Trade/gdp	4,326	0.69	0.45	0.02	4.39	1,071	0.79	0.58	0.13	4.39
Competitors	4,481	0.24	0.55	0	2	1,071	0.89	0.76	0	2
east_block	4,481	0.03	0.18	0	1	1,071	0.071	0.257	0	1
Foreign_mkts_in	4,481	34.86	24.50	2	87	1,071	51.06	24.65	3	88
exper_lang	4,481	1,814	3,797	0	16,557	1,071	1,883	4,084	1	16,557
Arabic Lang	4,481	0.10	0.30	0	1	1,071	0.042	0.201	0	1
French Lang	4,481	0.23	0.42	0	1	1,071	0.109	0.312	0	1
German Lang	4,481	0.02	0.15	0	1	1,071	0.071	0.257	0	1
Portuguese Lang	4,481	0.02	0.15	0	1	1,071	0.020	0.139	0	1
Russian Lang	4,481	0.03	0.16	0	1	1,071	0.034	0.180	0	1
Spanish Lang	4,481	0.15	0.35	0	1	1,071	0.254	0.435	0	1
Other Lang	4,481	0.29	0.45	0	1	1,071	0.371	0.483	0	1

Table 10: McDonald's International Expansion: Markets Already In and New Markets

Year	# Markets Entered by t-1	Total # Outlets in Markets Entered by t-1	# Outlets Added in t in Markets Entered by t-1	# Markets Entered in t	# Markets Entered in t Where No Competitor	# Outlets Added in t in Markets Entered in t
1967	0	0	0	2	1	3
1968	2	3	8	0	0	0
1969	2	11	24	0	0	0
1970	2	35	26	1	1	1
1971	3	62	14	5	5	10
1972	8	86	54	1	1	3
1973	9	143	64	2	2	4
1974	11	211	67	3	3	6
1975	14	284	70	2	2	4
1976	16	358	113	2	2	6
1977	18	477	103	2	2	2
1978	20	582	130	1	1	1
1979	21	713	165	2	2	4
1980	23	882	159	0	0	0
1981	23	1,041	130	3	1	5
1982	26	1,176	154	1	0	2
1983	27	1,332	205	1	1	1
1984	28	1,538	152	2	2	6
1985	30	1,696	213	4	2	5
1986	34	1,914	203	2	2	3
1987	36	2,120	205	0	0	0
1988	36	2,325	258	3	2	4
1989	39	2,587	284	0	0	0
1990	39	2,871	333	3	3	3
1991	42	3,207	419	4	2	5
1992	46	3,631	469	3	2	7
1993	49	4,107	569	4	1	4
1994	53	4,680	736	7	5	11
1995	60	5,427	1,523	6	4	17
1996	66	6,967	1,866	10	7	38
1997	76	8,871	1,822	6	5	17
1998	82	10,710	1,255	4	4	7
1999	86	11,972	1,547	2	2	2

Table 11 shows the number of restaurants added, and the growth rate in number of restaurants in percentage terms, as a function of how many years it has been operating there. The figures in the last few rows in the table are based on just a few markets that the firm entered very early on, and thus are not reliable. Ignoring those, this table shows a tendency for McDonald's to open more and more outlets on average in markets it has been in for longer periods of time. Most likely this reflects the fact that it entered the most profitable markets fairly early on and is still aggressively developing those markets even after 20 or 25 years there. More importantly, it shows a wide range of outlets added or growth rates across countries that McDonald's has been in for similar amounts of time. This fact of course is consistent with the notion that McDonald's is opening more outlets in certain markets than others. In Tables 8 and 9, I saw a tendency for McDonald's to enter high GDP per capita market relatively early. In my analyses below, I will see that it also opens more outlets in markets with higher per capita GDP, as predicted by a simple sunk entry cost model.

Finally, note that my description has focused on entry and growth in underdeveloped markets. As a result, I relate new outlets and growth in outlets not to market growth, but rather to the characteristics of the markets in levels. In other words, I have an entry or diffusion process where the number of outlets at any point in time remains far from the equilibrium level. What I observe are the effects of market characteristics rather than the effect of market growth on the growth of outlets. This is standard in entry analyses, and in turn shapes my empirical model below.

Table 11: McDonald's Growth Statistics By Year in Market

	Number of Outlets Added				Percent Outlet Growth				
Year in Market	Mean	Std. dev.	Min.	Max.	Mean	Std. dev	Min.	Max.	Total # obs.
1	2.10	2.08	1	17	200%	0%	200%	200%	83
2	2.80	3.49	0	18	64%	47%	0%	164%	81
3	3.48	4.90	0	23	45%	33%	0%	120%	77
4	3.82	4.78	-2	22	34%	42%	-200%	125%	73
5	4.33	5.60	-4	25	27%	26%	-67%	86%	64
6	6.40	8.66	-4	35	28%	24%	-40%	90%	58
7	7.84	11.98	-1	55	22%	20%	-13%	82%	51
8	6.77	13.71	-36	67	17%	20%	-42%	74%	48
9	8.84	11.80	-6	51	17%	29%	-150%	54%	45
10	10.78	15.04	0	57	19%	15%	0%	52%	41
11	7.92	10.69	-11	41	13%	22%	-81%	70%	38
12	12.71	21.60	-20	114	19%	23%	-16%	127%	38
13	12.47	14.91	-1	52	9%	38%	-200%	40%	36
14	12.61	16.54	0	70	13%	11%	0%	35%	36
15	14.59	17.71	-1	77	16%	17%	-40%	67%	34
16	12.30	12.44	0	41	18%	15%	0%	67%	30
17	15.21	19.95	0	94	16%	12%	0%	48%	28
18	17.41	21.73	0	94	14%	10%	0%	32%	27
19	19.50	29.03	0	143	15%	13%	0%	59%	26
20	10.22	29.24	-93	72	10%	12%	-21%	31%	23
21	20.78	25.59	-4	89	14%	11%	-6%	40%	23
22	21.43	25.34	0	91	24%	42%	0%	200%	21
23	24.20	28.31	0	88	19%	25%	0%	120%	20
24	27.83	35.49	0	96	22%	45%	0%	200%	18
25	50.19	88.05	0	349	16%	14%	0%	57%	16
26	73.50	140.38	-8	522	2%	47%	-160%	33%	14
27	67.18	125.90	2	433	20%	27%	3%	100%	11
28	73.89	131.61	1	415	10%	6%	4%	21%	9
29	90.13	141.82	2	406	13%	8%	3%	24%	8
30	36.67	47.26	0	90	11%	12%	0%	24%	3
31	36.00	31.11	14	58	10%	6%	6%	14%	2
32	20.00	21.21	5	35	4%	1%	3%	4%	2
33	23.50	23.33	7	40	5%	2%	4%	6%	2

3.d. Empirical Model and Results

Economic theory suggests that a firm like McDonald's forecasts its optimal number of outlets in each market based on market characteristics, and in any given period compares the profitability of entering any given market to the incremental cost of entering that market.[27] In other words, I have a notion of optimal number of outlets in each market given its characteristics, N_{jt}*, such that:

$$N_{jt}^* = f(Z_{jt}) + \varepsilon_{jt}$$

where the Z_{jt}s for example include market population and per capita income, as well as measures of country risk. I expect the latter to have a negative effect on the optimal number of outlets but market population and per capita income should have a positive effect on the same. Note that I allow the optimal number of outlets to vary over time as the market itself evolves.

A firm's expansion across markets is a dynamic one that evolves over time. Because the firm is initially absent from all markets, and given the assumptions of convex sunk costs and option value discussed above, yearly observations of outlet counts will not represent long-term equilibrium configurations of outlets across markets until many years after entry for all but the tiniest of markets. The intense growth of McDonald's in markets it has been in already for 20 or 25 years, depicted in Table 11, suggests just how slow the diffusion process is. Thus, the firm is typically playing catch-up, growing not in response to growth in the market, but in response to the overall expected desirability of the market based on the firm's experience in foreign markets.

[27] Indeed, in their study of international expansion, Gonzalez-Diaz and Lopez (2002) use franchisors' stated desired market size per outlet to determine the point of market saturation.

Like most studies of international expansion processes, I begin with an analysis of entry decisions. Specifically, I use duration analysis to model entry by McDonald's into a foreign market. In this analysis, a market j is considered to be at risk of entry if that market is an independent jurisdiction and in year t McDonald's has not as yet entered into it. Assuming a proportional hazard and an exponential survival function, I have

$$h(t|x_{jt}) = h_0(t)\exp(x_{jt}\beta)$$

while under a Weibull distribution, I have

$$h(t|x_{jt}) = p * \exp(x_{jt}\beta)t^{p-1}\ .^{28}$$

Results from estimating the hazard of entry as a function of my explanatory variables which include market characteristics related to demand (the Z_{jt} above) but also firm and market characteristics that may affect the cost of entry, using both the exponential and Weibull proportional hazard models, are summarized in Table 12. They show that indeed high market potential, captured by both GDP per capita and population is an important factor attracting McDonald's to particular foreign markets. Moreover, I find that trade/GDP also has a positive effect on the likelihood of entry, which would occur if high trade levels implied similar cultures or economic development, but also if such high trade levels lowered the cost of entry into a market for institutional reasons. Interestingly, high tax rates relates positively with the likelihood of entry. Most likely this relationship is explained by the fact that high tax rates are more likely in more developed economies, which in turn are more likely to attract entry. None of my risk measures (based on variance in GDP, or exchange rate fluctuation, or Henisz' political consistency measure) have statistically significant effects on the likelihood of entry. This

[28] I have also tried alternative specifications – the results are fairly robust across different distributional assumptions.

is consistent with McDonald's behaving like a risk neutral agent. Similarly, the presence of competitors does not significantly affect the likelihood of entry. Of course, for the vast majority of markets, this variable is zero: McDonald's is usually the first entrant by far. The effect, though insignificant, is positive in all cases, suggesting that the markets in which Burger King or Wendy's have already entered are likely to be desirable markets generally. Finally, physical distance has a clear and statistically negative effect on entry probabilities.

Table 12: Duration Analysis – Hazard of Entry into Each Market

	(1)	(2)	(3)	(4)	(5)	(6)
	Exponential	Exponential	Exponential	Weibull	Weibull	Weibull
Log (population)	0.51**	0.52**	0.51**	0.49**	0.49**	0.49**
	[0.09]	[0.09]	[0.09]	[0.09]	[0.09]	[0.09]
Log (gdpcap)	0.79**	0.80**	0.85**	0.78**	0.79**	0.85**
	[0.15]	[0.16]	[0.17]	[0.16]	[0.16]	[0.18]
Urban_rate	1.45	1.41	0.92	1.25	1.23	0.78
	[1.11]	[1.14]	[1.20]	[1.16]	[1.19]	[1.23]
Trade/GDP	0.75**	0.77**	0.80**	0.77**	0.79**	0.82**
	[0.24]	[0.26]	[0.25]	[0.24]	[0.26]	[0.25]
Corporate Tax Rates			2.13+			2
			[1.25]			[1.25]
Risk_gdpcap	0.98	0.97	0.22	1.01	1.00	0.27
	[0.90]	[0.89]	[0.96]	[0.87]	[0.86]	[0.94]
Risk_US exchange	-40.06	-39.97	-48.18	-41.16	-41.09	-49.04
	[41.92]	[41.91]	[48.11]	[43.51]	[43.51]	[49.45]
Political consistency	0.84	0.84	0.77	1.02	1.01	0.93
	[0.79]	[0.78]	[0.81]	[0.78]	[0.78]	[0.81]
Competitors	0.19	0.18	0.34	0.19	0.19	0.33
	[0.28]	[0.29]	[0.28]	[0.29]	[0.29]	[0.28]
Log (distance)	-0.55+	-0.56+	-0.52+	-0.51+	-0.51+	-0.49+
	[0.31]	[0.31]	[0.30]	[0.31]	[0.31]	[0.30]
Log (foreign markets in)	1.17**	0.95	1.30**	0.53	0.36	0.67
	[0.33]	[0.76]	[0.34]	[0.58]	[0.97]	[0.58]
Log (experience language)	0.20*	0.20*	0.17+	0.21*	0.20*	0.17+
	[0.08]	[0.09]	[0.09]	[0.09]	[0.09]	[0.09]
East Block	0.6	0.59	0.26	1.84*	1.81*	1.52
	[0.75]	[0.75]	[0.82]	[0.82]	[0.80]	[0.93]
Calendar Year		0.02			0.02	
		[0.06]			[0.06]	
Language Fixed Effects	Yes**	Yes**	Yes**	Yes**	Yes**	Yes**
Constant	-13.32**	-50.00	-14.87**	-13.69**	-44.65	-15.07**
	[3.27]	[113.90]	[3.35]	[3.30]	[121.03]	[3.38]
Observations	2,984	2,984	2,439	2,984	2,984	2,439
# Countries	145	145	124	145	145	124
Log Likelihood	-53.04	-53.00	-46.49	-52.14	-52.11	-45.64

Robust standard errors in brackets; + significant at 10%; * significant at 5%; ** significant at 1%.

As for firm characteristics, I find that McDonald's is more likely to enter new markets at time t if it has already done this often (large number of foreign markets already in) and if it has more experience in countries within the same language group. I

also find that the likelihood of entry at any time t is greater for previous eastern block countries as expected given that I treat these countries as at risk of entry only once they achieve independence. Finally, I note that the large negative values for the constant term imply that the baseline hazard is basically zero.

Focusing on entry rather than the whole process of international expansion of this chain, however, ignores much relevant information. Assuming that expansion or diffusion within a market can be modeled using the familiar S-shape pattern, I follow Pindyck and Rubinfeld's (1998) suggestion and specify that the number of outlets in market j at time t can be described by

$$Y_{jt} = e^{k1 - (k2/t)}$$

or, after taking the log of both sides,

$$\log Y_{jt} = k_1 - k_2/t$$

where k_1 captures the fact that there is a "target" or optimal number of outlets in the market, and k_2 captures the friction that prevents the firm from being at this optimal at any given time t. Note in particular that as t becomes larger, k_2/t becomes smaller, and hence I approach market saturation.

As expressed, however, the above equation does not include any regressors. My goal is to transform it in such a way as to capture the effect of different variables on the target number of outlets and the degree of friction. I therefore rewrite it as follows:

$$\log Y_{jt} = k_1(Z_{jt}) - k_2(W_{jt})/t.$$

I assume specifically that market potential variables affect the target but not the speed of expansio, and that factors such as distance and firm experience affect the degree of friction but not the desired level of outlets.[29]

I summarize in Table 13 the results obtained from examining the firm's expansion, using this specification. In all cases the regressions include country fixed effects among the Zs. Thus the coefficients on the other Zs capture the effect of changes in each variable over time within each country on the target level of stores. The first two columns show results for my full sample. Because McDonald's has not achieved maturity in many of the markets in my data, I present in the next two columns results obtained when I restrict the set of countries to only those that McDonald's considers its major foreign markets (Australia, Brazil, Canada, France, Germany, Japan, and the UK). Finally, I reproduce the full sample regressions in the last two columns of Table 13 but here use outlets/population as my dependent variable.

[29] The more traditional approach to estimate a diffusion curve of this type was pioneered by Griliches (1957) who used a logistic specification. Other authors have relied instead on the Gompertz. See e.g. Berndt et al. (2003). In either of these specifications, however, the interaction of variables that enter the target and those that enter the friction component of the estimation lead to large number of coefficients to be estimated in my setting, and prevent me in particular from including country fixed effects in the target equation. For that reason, I adopted the functional form above which does not suffer from this limitation.

Table 13: McDonald's Post-Entry Outlet Expansion

Dependent Variable:	Log (outlets)	Log (outlets)	Log (outlets)	Log (outlets)	Log (Outlets/ pop)	Log (Outlets/ pop)
	Full Sample	Full Sample	Major Markets	Major Markets	Full Sample	Full Sample
Target Parameters						
Log (population)	2.19**	2.12**	0.79	0.75	1.27**	1.20**
	[0.30]	[0.30]	[0.80]	[0.80]	[0.33]	[0.33]
Log (gdpcap)	2.84**	2.86**	2.96**	2.99**	2.94**	2.96**
	[0.13]	[0.13]	[0.34]	[0.33]	[0.14]	[0.14]
Urban_rate	3.04**	3.08**	21.49**	21.32**	2.87*	2.94*
	[1.08]	[1.09]	[3.20]	[3.18]	[1.19]	[1.20]
Trade/GDP	-0.11	-0.1	-0.42	-0.46	-0.06	-0.06
	[0.09]	[0.09]	[0.46]	[0.45]	[0.11]	[0.11]
Corporate Tax Rate	-0.61*	-0.64**	-1.80**	-1.77**	-0.87**	-0.88**
	[0.24]	[0.24]	[0.64]	[0.63]	[0.27]	[0.28]
Risk_gdpcap	-1.28**	-1.32**	0.04	-0.07	-1.58**	-1.62**
	[0.41]	[0.41]	[2.63]	[2.62]	[0.48]	[0.49]
Risk_US exchange	0.01	0	-0.37	-0.4	-0.07	-0.07
	[1.45]	[1.45]	[1.72]	[1.72]	[1.55]	[1.55]
Political consistency	0	0	0.24	0.23	0	0
	[0.14]	[0.14]	[0.38]	[0.38]	[0.15]	[0.15]
Competitors	0.16**	0.16**	0.29**	0.29**	0.20**	0.20**
	[0.03]	[0.03]	[0.05]	[0.05]	[0.03]	[0.03]
Country Fixed Effects	Yes**	Yes**	Yes**	Yes**	Yes**	Yes**
Friction Parameters						
Log (distance)	-0.40**	-0.20**	-0.48*	-0.38**	-0.45**	-0.29**
	[0.09]	[0.03]	[0.24]	[0.09]	[0.10]	[0.03]
Trade/GDP	0.88**	0.86**	-1.43	-1.1	1.01**	1.00**
	[0.06]	[0.06]	[1.24]	[1.00]	[0.08]	[0.08]
Log (foreign markets in)	0.10+	0.11+	1.20**	1.12**	0.14*	0.15*
	[0.06]	[0.06]	[0.34]	[0.29]	[0.06]	[0.06]
Log (experience language)	-0.04*	-0.03+	-0.09+	-0.09+	-0.03+	-0.03
	[0.02]	[0.02]	[0.05]	[0.05]	[0.02]	[0.02]
East Block	-0.25	-0.22			-0.42*	-0.38*
	[0.16]	[0.16]			[0.19]	[0.19]
Ownership Control	-0.21**	-0.22**	-0.27	-0.32+	-0.21**	-0.22**
	[0.05]	[0.05]	[0.20]	[0.16]	[0.06]	[0.06]
Calendar Year	0.00*		0		0.00+	
	[0.00]		[0.00]		[0.00]	
Observations	1,063	1,063	195	195	1063	1063
# Countries	83	83	7	7	83	83
Log Likelihood	-147.53	-145.51	36.96	37.13	-276.67	-275.68
Autocorrelation (rho)	0.66	0.66	0.61	0.61	0.62	0.63

Robust standard errors in brackets; + significant at 10%; * significant at 5%; ** significant at 1%.

The results in Table 13 imply that the target level of stores is highly positively related to indicators of market potential and is negatively related to the corporate tax rate. Interestingly, the number of competitors increases the target, suggesting that either McDonald's reacts aggressively to the presence of its main U.S. competitors in these markets, or that their presence is taken as a sign of high market potential. The fact that I control for country fixed effects in the regressions, however, implies that the latter effect would need to be a dynamic one to be consistent with my results; that is, the increased presence of competitors is taken as a sign of increased market potential by McDonald's.

As for the variables that I relate to the speed of expansion, I find that distance from McDonald's headquarters, in Chicago IL, reduces significantly the speed at which new outlets are added to close the gap between target and actual, as does increased ownership control. McDonald's total international experience, on the other hand, along with a country's openness to trade, tends to speed up the development of new units within each market. The results with respect to the firm's "culturally relevant" experience, however, go counter to my expectations. I am currently exploring further the robustness of this and other results.

3.e. Conclusion

In this study, I have examined the international expansion process followed by one of the most visible American firms to expand abroad, and also a firm that has pioneered American fast-food and franchising in several countries. I found that this firm's pattern of entry into foreign markets and growth easily rejects the notion that McDonald's expanded abroad because it had saturated its home market. Instead, consistent with traditional profit maximization arguments for a firm with market power

that faces numerous market opportunities and limited resources, I find evidence that it allocated resources to achieve growth across many highly desirable markets. Specifically, it enters those markets with the most promising demographics first. Finally, I have found that while growth conditional on entry, and entry itself, share some common features, e.g. they are both positively related to a country's market potential, there are also a number of factors that affect entry and expansion differently. I conclude that it is worthwhile considering how service chains expand abroad and going beyond just entry to gain further insights in the process and hurdles involved in foreign expansion.

CHAPTER 4
WHICH EXPERIENCE MATTERS?
LEARNING ECONOMIES IN FOREIGN MARKETS

4.a. Introduction

Learning economies arise when efficiency gains accompany greater operating experience. Recent strategy research emphasizes the importance of developing and exploiting learning economies as a means of achieving competitive advantage. However, studies show that learning economies differ across countries, across industries, across firms and even across divisions of the same firm. One explanation for such differences is that there are other sources of knowledge besides operating experience that can reduce the need for and value of knowledge gained from direct operating experience.

Much has been made of the importance of ownership boundaries in impeding knowledge transfer. This study empirically examines the foreign operations of a single global franchised fast-food chain to determine which experience matters to outlet operating efficiency. Specifically, I examine how efficiency gains from operating experience differs across countries and ascertain just how binding ownership boundaries are to knowledge transfer. I do this by examining the learning economies related to different sources of operating experience—own outlet sales, same franchisee outlet sales, other franchisee outlet sales, country developer outlet sales, and other country outlet sales—within the chain.

The analysis employs a unique proprietary dataset of 600,000+ weekly observations covering all outlets (2,000+) and 570 distinct business owners of a specific franchise chain in 10 foreign markets for the period from 1990 to 2003. The advantage of this extensive dataset on the operations of a single franchised fast-food chain is that it enables a relatively high degree of comparability across outlets even when those outlets operate in different countries. This advantage comes at the potential cost of lack of generalizability.

I find that learning economies differ markedly across countries. Moreover, and not surprisingly, recent experience is of greater value than that gained in the past as knowledge depreciates by four percent per week. In contrast to prior findings however, my results suggest that knowledge from experience gained at other outlets owned by the same franchisee affords no significant learning economies and may introduce diseconomies. Interestingly, knowledge derived from the operating experience of outlets owned by country developers appears to matter most. Not only do franchisee-owned outlets within a country experience learning economies from country developer experience but such economies exceed even those related to own outlet experience. Finally, I find no evidence of efficiency gains associated with the chain's total foreign market operating experience.

Overall, the findings provide evidence that while ownership boundaries may matter, they need not be so important. In particular, in the franchised setting examined here contractual mechanisms seem to induce sizable knowledge transfer. Within such a context, the notion of ownership boundaries may become blurred. These findings challenge the unqualified view that knowledge transfers more readily within firm

boundaries than across them. If contracts can equally or more effectively facilitate transfer of knowledge than ownership boundaries, the basic tenet of the knowledge-based view of the firm must be reconsidered.

The chapter is organized as follows. In the next section, 4.b., I briefly review related research. Section 4.c. describes the study's empirical setting and data. Section 4.d. presents empirical analysis and results for learning economies related to own outlet experience. Section 4.e. extends this to explore the impact of the presence of other sources of experience. Section 4.f. concludes.

4.b. Related Research

First studied in the production of pre-World War II aircraft, learning curves highlight the phenomenon that as organizations gain experience, the cost of producing each additional unit decreases but at a decreasing rate (Wright, 1936). The learning rate reflects the amount of experience required to understand the relationship between a firm's operating practices and the results that they yield. Also, with repetition employees develop greater expertise in performing operating practices. Alternatively, the learning rate may be viewed as the performance gain derived from some period of operating experience. Empirical research on the learning curve has confirmed that this relationship between experience and efficiency gains applies to organizations across a wide spectrum of economic activity (Dutton and Thomas, 1984; Argote, 1999).

During the mid-1990s several scholars, observed that organizations progressed down the learning curve at different rates. (See e.g. Argote & Epple 1990; Argote, Beckman & Epple 1990; Epple, Argote & Davedas 1991) Furthermore, even within the same organization different divisions or subunits learned at different rates. Out of this

basic observation emerged a fundamental overarching research question: Why do some organizations learn at faster rates than others? (Argote 1999) A related question posed by Argote and others has directed subsequent enquiry: ***Could efficiency gains realized within one part of an organization be transferred so as to benefit another part of the organization?*** (Argote, Ingram, Levine & Moreland 2000; Argote, Beckman & Epple 2000; Epple, Argote & Murphy 1996; Lapre & Wassenhove 2001; Ingram & Simons 2002) Much has been made in this literature of the importance of organizational boundaries as an impediment to knowledge transfer.

The knowledge-based view of the firm ascribes the firm's very existence to the greater efficiency of knowledge transfer within rather than across firm boundaries (Kogut & Zander 1991, 1992). However, it is unclear just exactly what conditions limit the size and scope of organizations in this theory; if none exist, a single firm under which all economic exchange is organized would seem to represent the most efficient configuration to support knowledge flows. Given some limiting conditions, the question arises as to whether firms might employ contracts with outsiders to create higher-powered incentives to exploit knowledge more thoroughly. In short, lower-powered incentives within hierarchical structures may prove less effective than contracts under certain circumstances in facilitating the transfer of knowledge.

In their seminal 1995 study, "The Acquisition, Transfer, and Depreciation of Knowledge in Service Organizations: Efficiency in Franchises", Darr, Argote and Epple empirically lent credence to the knowledge-based view of the firm. This study is the closest precedent to the present research as it documents the nature of learning-by-doing in 36 outlets of a franchised pizza chain operating in western Pennsylvania. It provides

empirical evidence that: (1) unit costs decline with greater production experience, (2) knowledge derived from learning by doing depreciates rapidly, and (3) knowledge transfers exclusively across stores owned by the same franchisee. This study has influenced much subsequent research as indicated by the frequency with which it has been referenced.[30] (e.g. Epple, Argote & Murphy 1996; Darr & Kurtzberg 2000; Ingram & Simons 2002) However, as interesting and convincing as the Darr, Argote & Epple (1995) findings may be, they remain findings from a sample of only 36 outlets over a year and a half. Given the study's impact and the importance of its findings in directing strategy research, the issue deserves further attention.

While much attention has been accorded recently to this vein of research in the US, relatively little work has been undertaken with regards to knowledge acquisition and transfer occurring in and across other national contexts. International operations introduce particular challenges for firms as they must learn to effectively operate in unfamiliar settings. Authors have examined the degree to which knowledge spillovers arise from one market to another (Almeida 1996; Jaffee & Trajtenberg 1999). To my understanding, this study is the first to examine acquisition and transfer of knowledge within as well as across multiple national settings.[31]

Experience, and the knowledge derived from it, holds a prominent position within the international business literature explaining foreign market selection and entry mode choice. Lack of knowledge about the business environment of host countries is said to introduce a "liability of foreignness", impeding foreign firms from competing on an equal footing with local firms (Hymer, 1960). Possession of firm-specific competitive

[30] 118 citations received through April, 2007

[31] Almeida & Phene (2004) examine knowledge transfer within foreign countries but not across them.

advantages such as intangible assets is frequently cited as the means by which foreign firms remain competitive with local firms (Buckley & Casson, 1976; Caves, 1982; Dunning, 1977). Another means of remaining competitive—as argued in the international business research—is by selectively entering foreign markets for which prior experience serves to reduce the foreign entrant's knowledge asymmetry in the host market. This was precisely the focus of the first study within this dissertation. However, international business research has rarely looked beyond entry to examine how firms acquire additional knowledge and diffuse it within foreign markets. A firm adept at such skills effectively reduces its liability of foreignness and need worry less about gaining experience in one country that may make it easier to enter some subsequent country. This study therefore takes an important step beyond entry to directly examine how knowledge evolves with increasing foreign market operations.

Finally, there has been increased recognition recently that there are numerous issues associated with measuring the sources of efficiency gains. Researchers have revisited classical learning-curve analyses and identified omitted variables that account for a portion of what had been previously thought to be learning economies (Sinclair, Klepper, and Cohen, 2000; Thompson, 2001; Thornton & Thompson 2001). This work emphasizes the importance of the right set of controls to effectively identify learning economies. In other words, disentangling learning economies from other sources of efficiencies that may correlate with the passage of time has been an important problem. This work also underscores the value of employing detailed, firm-specific data with which such controls can be more easily introduced. My study benefits from just such a data set.

4.c. Empirical Setting

The setting in which I examine learning economies is the foreign operations of a franchised fast-food chain. Although Darr, Argote and Epple's study was set in the context of franchising, relatively less attention has been given to service organizations and to my knowledge none within the international context. This relatively unexplored empirical context affords several key benefits to my analysis. Foremost among them, franchised chains by their very nature require a great degree of conformity among the different outlets, even when they are situated within different national contexts. Franchised outlets sell largely the same products, use the same food inputs and employ the same production processes and policies across the entire chain. Extensive codified operating procedures reduce the degree of "tacit" knowledge for outlets within franchised chains, potentially reducing the magnitude of learning economies. Specifically, codified procedures are apt to reduce the cost disadvantage that new stores suffer from. However, systematic differences in performance still could arise from knowledge gained through outlet experience and from the outlet's position within the franchised chain's ownership structure.

4.c.i. Overview

To maintain confidentiality, I cannot reveal the nature of the items sold or the specific countries to which the data refer. However, the production technology is consistent across outlets such that efficiency comparisons among outlets within and across country contexts are more reliable than in many other business settings. The database employed in this study is extensive and unique. The data come directly from the fast-food franchisor's information system and include weekly sales, food and labor costs

(all expressed in local currencies) and items sold for all foreign outlets for the years 1990 through 2003. In addition, the franchisor provided time-invariant outlet-specific information, namely outlet address, and open and close dates (where applicable). The data also includes ownership information for each outlet in 2003, including the name of the country developer—the firm responsible for developing a foreign market, the name of the current outlet owner and, if acquired, when this current owner took possession of the outlet.

A local country developer may own and operate outlets itself, sub-franchise (license) outlets to third party franchisee owners, or engage in both direct ownership and sub-franchising, depending on the contractual terms entered into with the franchisor. Or, the franchisor may directly assume the role of country developer. If so, the franchisor directly decides how to divide outlet ownership among franchisee owners and itself. In markets where the franchisor does not assume a direct role as country developer, it establishes a contractual relationship with a local firm. Typically, the contracts involve the provision of support and guidance by the franchisor in exchange for royalties calculated as a percentage of sales on all outlets operated within the country. The contracts also include mechanisms by which the franchisor can ensure that the local country developer maintains the consistency of the brand. This is important as it leads to still greater comparability of outlet performance across countries.

This study focuses on the top ten foreign markets, measured by the number of outlets operating in 2003 as the reliability of the weekly data from these markets appears notably better than for other markets. In other countries, market entry occurs throughout the study, resulting in less fully developed ownership structures and fewer outlets to

analyze. Furthermore, the top foreign markets are all developed economies. This diminishes extreme idiosyncratic circumstances that may arise in less developed economies, such as coups, hyper inflation and questionable rule of law. The sample includes 675,695 observations and encompasses 2,087 outlets owned by 562 franchisee owners and 8 local country developers--either master franchisees (MF) that license outlets to franchisee owners or area developers (AD) that retain ownership of all outlets within the country.[32]

Table 14 provides an overview of the outlets, ownership structure, and the firm's extent of operations within the different countries. For each country, Table 14 shows the type of country developer (MF and AD), outlets opened since entry, outlets that underwent a transfer of ownership, outlets closed since entry and a detailed breakdown of the ownership structure for outlets still operating at year-end 2003. The chain was present in all countries except country J at the start of the data in 1990 but had opened more than two outlets in only four countries (A, B, D and E) by that year. The significant flexibility available to country developers in configuring outlet ownership is reflected in the widely varying market ownership structures presented in Table 14. In some markets, there are no outlets or only a few owned by franchisees despite the large total number of outlets (Countries E, I and J); in others, there are principally single-outlet franchisee owners (Country C); in still others, the country developer owns few if any outlets, instead overseeing a mix of multi-outlet and single-outlet franchisee owners (Country G); or, the country developer combines franchisees with varying numbers of outlets and country developer-owned outlets (Countries A, B, D, F and H). In concert, these 10 markets

[32] In two of the 10 markets (countries F & G) the US franchisor (US) has assumed a direct ownership position over some outlets in those countries and directly manages relations with franchisees.

afford an interesting variety of ownership structures in which to examine learning economies across ownership boundaries.

Table 14: Country Overview – Breakdown of Outlets and Franchisees

Country		A	B	C	D	E	F	G	H	I	J	Total
Developer Type in 2003		**MF**	**MF**	**MF**	**MF**	**AD**	**Own**	**Own**	**MF**	**MF**	**AD**	
Breakdown of Outlets	**# Opened** [#before study period]	**276** [118]	**294** [33]	**221** [1]	**311** [35]	**208** [55]	**57** [2]	**91** [1]	**413** [1]	**111** [1]	**105** [0]	**2,087** [247]
	- Country Developer	14	84	34	27	208	19	1	240	102	105	**834**
	- Franchisee Owned	262	210	187	284	0	38	90	173	9	0	**1,253**
	# Transferred	128	102	67	124	0	10	28	35	14	0	**508**
	# Closed	**68**	**36**	**8**	**22**	**45**	**4**	**36**	**33**	**8**	**31**	**291**
	- Country Developer	0	1	2	1	45	3	0	11	7	31	**101**
	- Franchisee Owned	68	35	6	21	0	1	36	22	1	0	**190**
	# End of 2003	**208**	**258**	**213**	**289**	**163**	**53**	**55**	**380**	**103**	**74**	**1,796**
	- Country Developer	14	83	32	26	163	16	1	229	95	74	**733**
	- Franchisee Owned	194	175	181	263	0	37	54	151	8	0	**1,063**
# Franchisee Owners		**108**	**96**	**171**	**113**	**0**	**19**	**28**	**21**	**7**	**0**	**563**
Average # Outlets		**1.9**	**1.9**	**1.1**	**2.5**		**2.1**	**2.0**	**7.6**	**1.3**		**1.9**
# Outlets/Franchisee	**1 outlet**	73	62	159	58		8	17	1	4		**382**
	2 outlets	12	17	8	25		5	6	3	2		**78**
	3 outlets	7	3		7		3	3				**23**
	4 outlets	4	7		11		1		3			**26**
	5 outlets	1	1		3				3			**8**
	6-10 outlets	4	5	1	4		1		9			**24**
	11+ outlets	1			3			1	2			**7**
	Maximum	19	9		16		6	16	29			

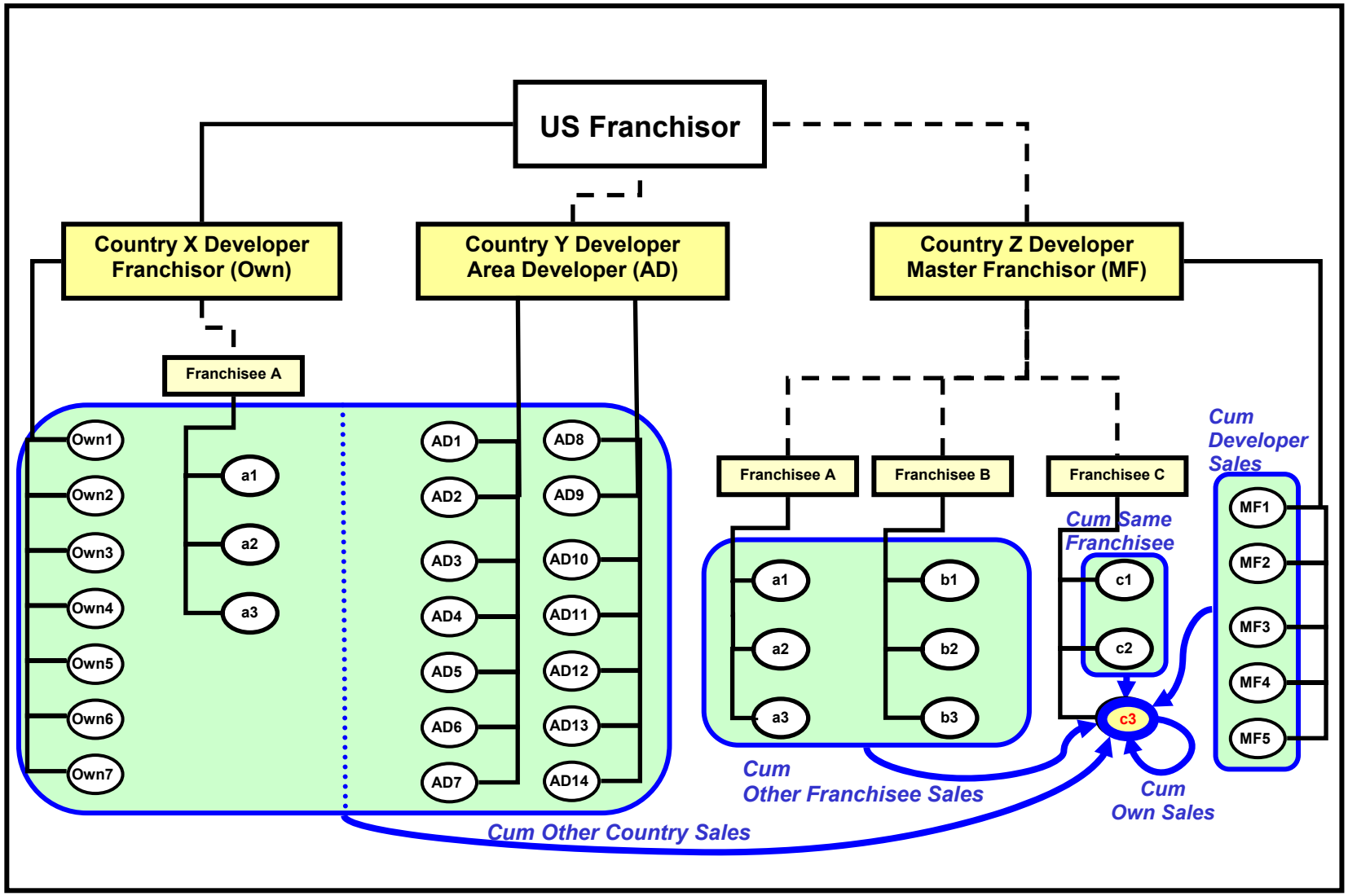
To meaningfully identify and classify different sources of experience that might improve an outlet's efficiency, I rely upon Figure 1 which offers a stylized schema of the ownership structure for a franchised chain. Consider outlet c3 in country Z. Its own

cumulative experience (indicated by "***Cum Own Sales***") should increase c3's efficiency over time.

Because franchisee C owns more than one outlet however, she can share with outlet c3 valuable knowledge gained from operating experience at c1 and c2 so as to generate greater efficiency for c3 than she would realize absent other commonly owned outlets. Furthermore, commonly-owned franchisee outlets tend to be proximate to one another (Kalnins & Lafontaine 2004), making the operating experience gained in other commonly-owned outlets especially relevant. Relevance moreover makes the experience gained at other commonly-owned outlets more likely to be transferred. (Schulz 2003) Cumulative experience from commonly-owned franchisee outlets is captured in Figure 1 by "***Cum Same Franchisee Sales***".

Empirical support for the transfer of experience among commonly owned outlets is a key finding of Darr, Argote and Epple's study. However, as the number of outlets owned by a franchisee increases, it may become more difficult to effectively monitor employees of outlets in which the owner is not present. Such monitoring difficulties may make it less efficient to operate several outlets rather than merely one. Consequently, while the incentive is there for the owner to transfer knowledge among commonly-owned outlets, it may be more elusive to measure the benefits of such knowledge transfer if there exist inefficiencies related to multi-outlet ownership that outweigh the potential gains of knowledge transfer. These would represent costs to multi-outlet ownership that serve to define the boundary conditions for expanding the size and scale of the firm.

Figure 5: Sources of Experience for a Franchisee-Owned Outlet (c3 in Country Z)



The country developer who receives royalty payments from c3 also has an incentive to enhance outlet c3's efficiency by sharing the benefit of experience gained at outlets he operates or oversees.[33] Finally, cumulative experience gained in outlets within other markets outside the country, Z in this case, is represented by "***Cum Other Country Sales***" in Figure 5. If physical proximity and common ownership facilitate transfer of knowledge, one might expect that own outlet experience, commonly-owned outlet experience, country developer outlet experience, other within-market franchisee experience and foreign country experience sit along a continuum from most likely to least likely to enhance outlet-level efficiency. Cumulative experience garnered at the developer outlets is captured by "***Cum Developer Sales***" in Figure 5, while cumulative experience gained at other franchisee outlets within the country that are not owned by franchisee C are identified as "***Cum Other Franchisee Sales***".

In the preceding discussion, I have focused on a franchisee-owned outlet. Consider now a country developer-owned outlet such as outlet MF1. In this case, note that "***Cum Developer Sales***" includes cumulative experience gained at other commonly-owned country developer outlets.

4.c.ii. The Data

Before examining the data further, there are several issues to resolve. First, the different local currency denominated sales and costs must be made comparable both across countries and over time. Second, pre-1990 cumulative outlet experience is unavailable for a number of outlets in countries A, B, D and E. Third, measuring

[33] Note that Franchisee B may view outlet c3 as a competitor rather than a source of knowledge. Nevertheless, the country developer has every incentive to assemble knowledge from all outlets within the chain and to diffuse that knowledge throughout the entire chain. Operating manuals formally codify such knowledge in franchise policies and procedures for just this purpose.

cumulative experience also requires that production be known for all weeks during the study. Unfortunately, these data are missing in some cases. Fourth, where an outlet has changed hands, I know only the most recent outlet owner. This introduces two issues. On the one hand, unknown ownership prior to transfer reduces the set of usable observations.[34] If an outlet has changed hands, I only know who took ownership after the exchange and not who owned it initially. On the other hand, it becomes necessary to determine how to treat outlet experience (which is available in the data) gained before the current owner took possession. Simply put, to what extent does the new owner reap the rewards of outlet experience gained under someone else's watch? Finally, as 291 outlets were closed during the study period, it is important to determine whether returns to experience gained at these outlets differ from those at outlets that remain open throughout the entire study.

To make local currency denominated sales and costs comparable across both countries and time, I adopt a measure of efficiency—variable costs per unit of sales revenue—whose units are insensitive to currency differences across countries or time. For its part, cumulative sales experience is measured in constant year 2000 US dollar sales.[35] To derive this measure of sales experience I transform the current local currency values into year 2000 constant local currency values using the IMF's International

[34] 119,117 observations are lost due to transfers of outlet ownership.

[35] I also analyzed the data using variable costs per item sold as the dependent variable and items sold as the measure of productive experience in accordance with the approach employed by Darr, Argote and Epple, 1995. However, these variables were not normally distributed (see Appendix 5), less availability of experience data (items sold), and the fact that items sold would reflect experience associated with burger sales but not that from the sale of complementary products (e.g. fries). For comparative purposes, I also include regression results for alternative measures of productivity and experience in Appendix 6.

Financial Statistics. Next, I convert constant currency values into year 2000 $US values using the relevant year 2000 exchange rate.[36]

For outlets opened pre-1990, I develop estimates of cumulative sales as of January 7, 1990 using the following approach. I calculate a country-specific average cumulative outlet sales by week of outlet operation based only on data from 1990 through 1994 so as to limit potential intervening changes that may arise as the time horizon extends out. Next, I scale the average cumulative sales by week of operation by the size of the outlet to which the estimate applies. Then, I assign the estimate of cumulative outlet sales based on the number of weeks of outlet operation on January 7, 1990.[37]

Measuring cumulative sales experience requires that ALL weekly sales observations be present; otherwise, a measure of cumulative sales after a missing observation is inaccurate and as the missing observations increase so too does the inaccuracy of the measure. Fortunately, weekly sales data are present for over ninety-nine percent of the observations. I exploit the consistency of sales revenue per item sold from week to week for an outlet and across outlets within a given week in a country to develop estimates of missing outlet weekly sales data. The few remaining gaps for

[36] Weekly local currency/$US exchange rates were present within the company supplied information system. After verifying their accuracy against IMF data, these data were retained within the study. Results were largely unchanged when foreign currency was first exchanged at the current exchange rate and then discounted by the US inflation rate. However, I felt it was theoretically more defendable to discount within the local currency as it would seem to provide the least distortion to the value of money reflected by the local currency.

[37] Column 2 of Appendix 7 indicates that this approach results in estimated coefficients that are significantly lower than observations of uncensored outlets. However, such a difference may merely stem from the fact that censored outlets were opened earlier and thus had more to learn than outlets that were opened later within the country.

weekly sales are then linearly imputed. The resulting dataset includes cumulative outlet sales for all observations.[38]

Given that the data identifies exclusively the new owner when transfers of outlet ownership occur, all observations prior to the ownership transfer of an outlet must be excluded. Yet, I must still determine whether or not prior outlet experience carries over to the new owner. I do so by testing whether there is a statistical difference in the estimated coefficient of learning economies for outlet experience gained during the six month period after outlet ownership transfer. No such statistically significant difference is present.[39] Therefore, for this study I assume that new owners gain the full benefit of pre-transfer experience and cumulate experience from an outlet's opening.

Finally, I test whether there is a substantive difference in learning economies where there is sample attrition, closed outlets. I found no statistically significant difference between the learning economies realized by outlets that close during the study period as compared to those that remain in operation throughout the study period.[40]

4.c.iii. Basic Patterns in the Data

Figure 6 presents for 2003 the average country-specific weekly variable costs per sales dollar in 2003, delineating the constituent parts of food costs and labor costs. It shows that variable costs range from 46% to 63% across the 10 countries in the sample. Food costs represent the majority of variable costs for all but two countries, E and G. Cross-country variation in labor as a percent of sales is notably greater than that in food as a percent of sales.

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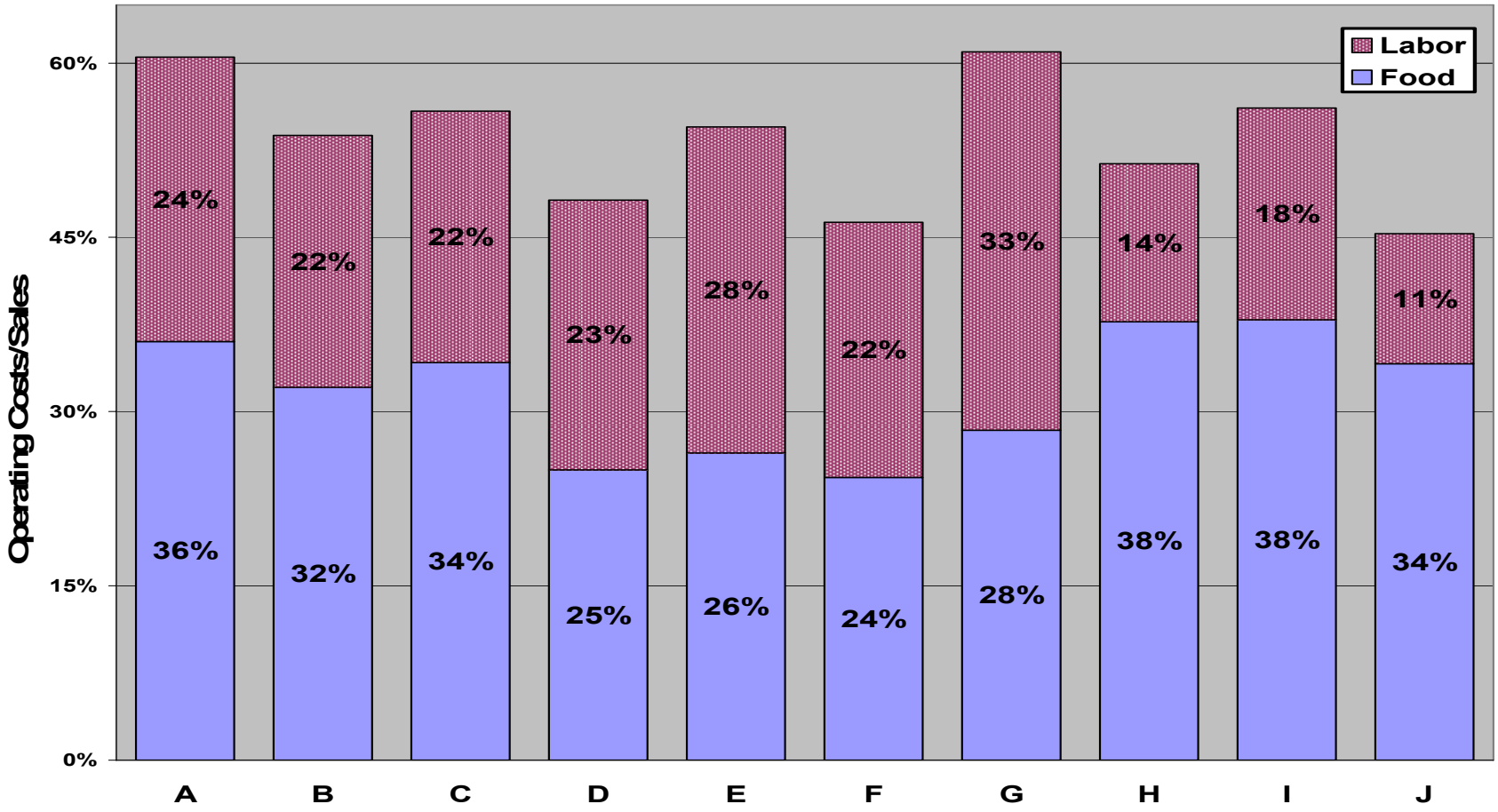
[38] Column 3 of Appendix 7 indicates that there is no statistically significant difference between outlets for which weekly sales data was imputed versus those for which there was no imputation of data.

[39] See column 4 of Appendix 7.

[40] See column 5 of Appendix 7.

Figure 6: Breakdown of Outlet Operating Efficiency by Country in 2003



This is seen by the fact that labor costs in country G are threefold those in country J while the greatest difference for food costs between country F and H is merely 58%. In sum, Figure 6 suggests that there are significant country-level differences in outlet-level operating efficiency.

To better understand the sources of such differences, Table 15 shows the level of $Food/ Week, $Labor/Week, and $Sales/Week on average and the percent by which each component has changed over the course of the study period for each country. From Table 2 one first notes that average outlet efficiency has evolved differently within different countries. On average outlets in countries A, B, D, F, I, and J have experienced efficiency gains over the study period while outlets in countries C, E, G, and H have all experienced efficiency losses.

To understand what is driving these changes, one needs to examine how the components vary over time. If the food % change is lower than the sales % change then increasing efficiency is derived from how food costs enter operating efficiency; likewise, if labor % change is lower than sales % change then increasing efficiency is derived from how labor costs enter operating efficiency. For countries F and J, food costs relative to sales declined over time whereas all other countries experienced increases in food costs in proportion to sales. For countries A, B, D, F, and I, labor costs relative to sales declined over time whereas other countries experienced increases in labor costs relative to sales. Thus, those countries with operating efficiency gains more often stem from labor efficiency gains than food efficiency gains. Furthermore, in six countries (E, F, G, H, I, and J), declining average weekly outlet sales is observed over the study period.

Table 15: Weekly Sales and Cost Data by Country

Country	A	B	C	D	E	F	G	H	I	J
Variable Costs/ Sales in 2003	**0.61**	**0.54**	**0.56**	**0.48**	**0.55**	**0.46**	**0.61**	**0.51**	**0.56**	**0.45**
% change since 1990*	-0.8%	-7.1%	53.5%[Ŧ]	-4.3%	10.5%	-21.7%	13.8%	19.2%	-1.1%	-13.3%
$ Sales/Week in 2003	**$6,392**	**$9,215**	**$6,887**	**$13,917**	**$14,899**	**$5,518**	**$9,620**	**$10,263**	**$8,121**	**$2,643**
% change since 1990*	6.5%	105.0%	66.6%	45.6%	-34.3%	-33.7%	-4.1%	-70.6%	-1.5%	-63.2%
$ Food/Week in 2003	**$2,303**	**$2,958**	**$2,356**	**$3,476**	**$3,939**	**$1,343**	**$2,731**	**$3,872**	**$3,077**	**$902**
% change since 1990*	12.3%	139.7%	127.2%	45.9%	-28.5%	-49.2%	14.7%	-68.9%	21.0%	-70.8%
$ Labor/Week in 2003	**$1,565**	**$1,997**	**$1,491**	**$3,234**	**$4,182**	**$1,212**	**$3,135**	**$1,397**	**$1,482**	**$296**
% change since 1990*	-2.9%	46.1%	219.3%	32.8%	-26.3%	-46.8%	4.7%	-46.5%	-30.7%	-55.4%

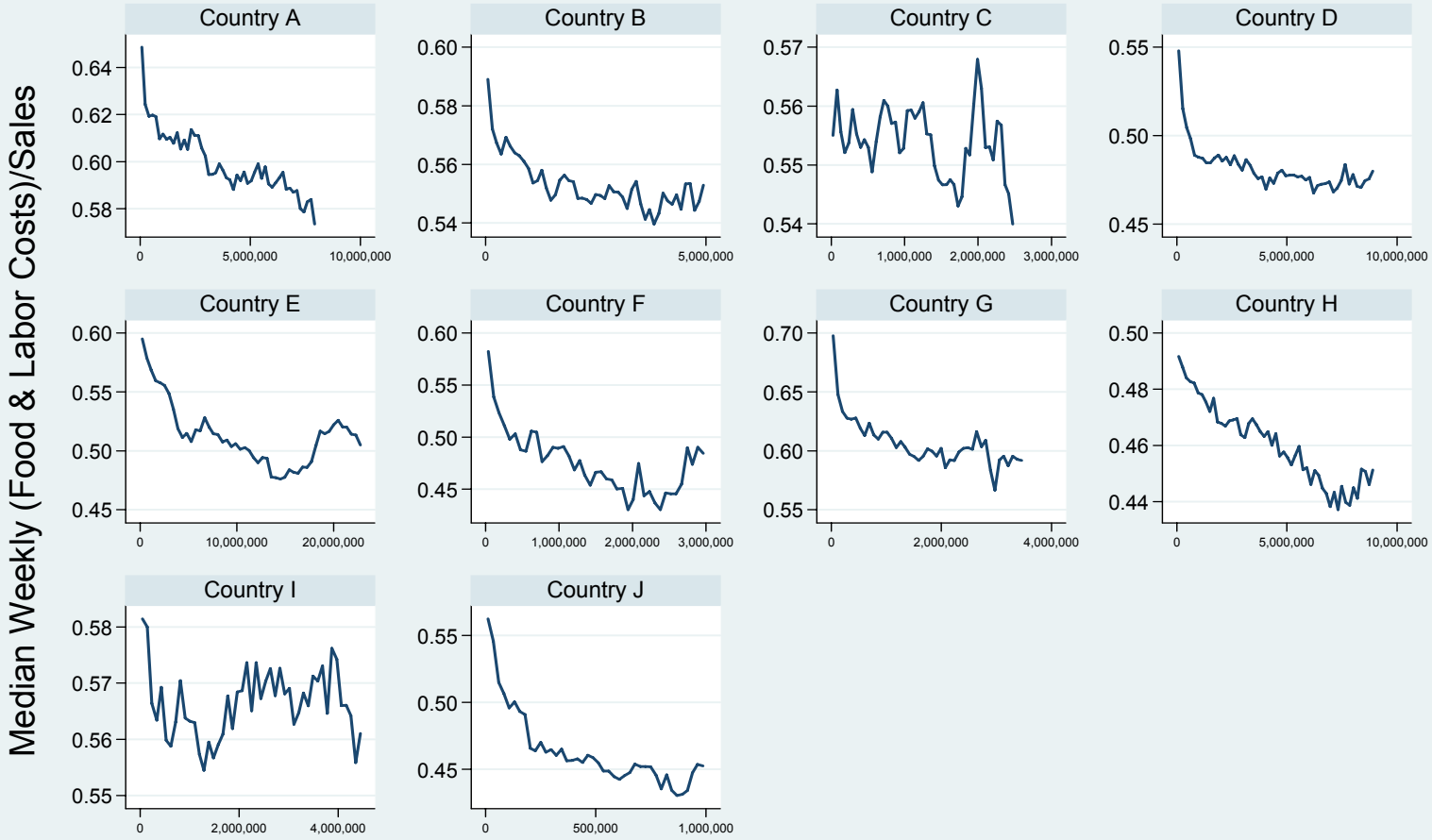
* All dollar values are year 2000 constant dollars. Dollar values reflect annual averages for 2003 and percentages are calculated with a base year of 1990 for all countries except G and J which respectively have 1991 and 1996 as base years.

[Ŧ] In country C, the annual average values for 1990 are based on only a few outlets. This explains the distinction seen in percentage change for country C versus all other countries.

Thus, the country for which outlets experienced the greatest efficiency gains over the study period, country F, benefited from both food and labor cost savings relative to sales. However, country H suffered from both food and labor cost reductions that did not equal the reduction in sales. Table 15 reinforces the finding from Figure 6 that there are important differences across countries.

Figure 7 provides a first look at the relationship between median outlet efficiency and cumulative outlet operating experience in each country in the sample. All countries, excepting possibly F, seem to exhibit patterns consistent with the presence of learning economies, albeit to differing degrees. It is difficult at this stage to determine whether such differences stem from learning economies or scale economies. However, in the empirical analysis, it will be important to examine whether the influence of the level of experience on the outlet operating efficiency varies by country, while controlling for outlet scale economies.

Figure 7: Operating Efficiency* vs. Outlet's Own Cumulative Sales

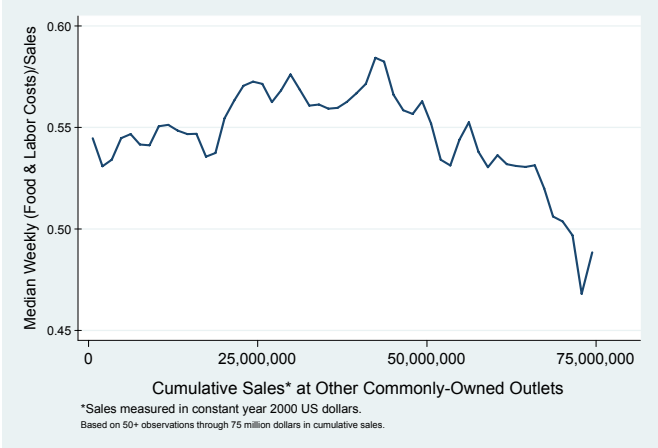


*Operating efficiency is measured as weekly food and labor costs divided by sales revenues

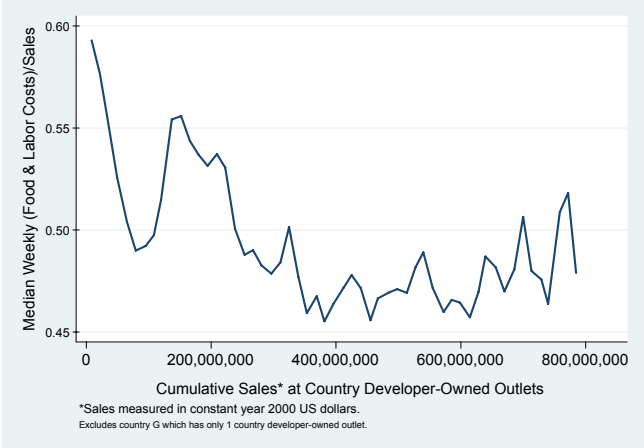
Finally, Figure 8 depicts the relationship between median outlet efficiency and commonly-owned outlet experience, country developer outlet experience, other franchisee-owned outlet experience within the same country, and experience from outlets in the 9 other major foreign markets for franchisee-owned outlets. As experience gained at commonly-owned outlets increases, as experience gained at country-developer outlets increases and as experience gained at outlets operated in the other nine foreign markets increases, the median efficiency level of an outlet appears to improve; this does not occur for experience gained at outlets owned by other franchisees within the same country. However, as these are simple plots of the data, they do not control for other factors that may be correlated with experience. In what follows, I examine the separate effect of these different sources of within-chain experience on outlet-specific efficiency.

Figure 8: Outlet Operating Efficiency vs. Cumulative Sales from Other Outlets

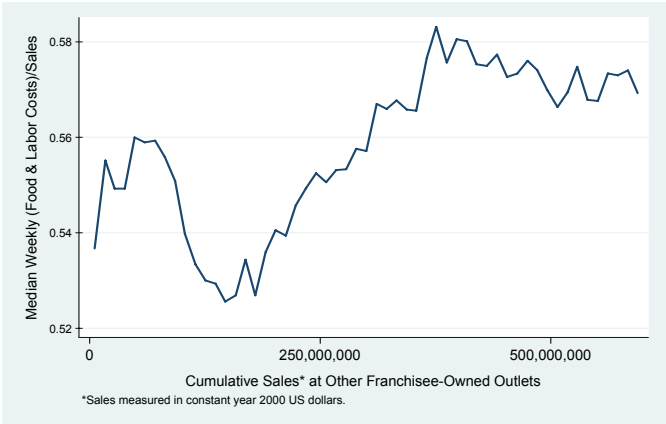
Same Franchisee Owner



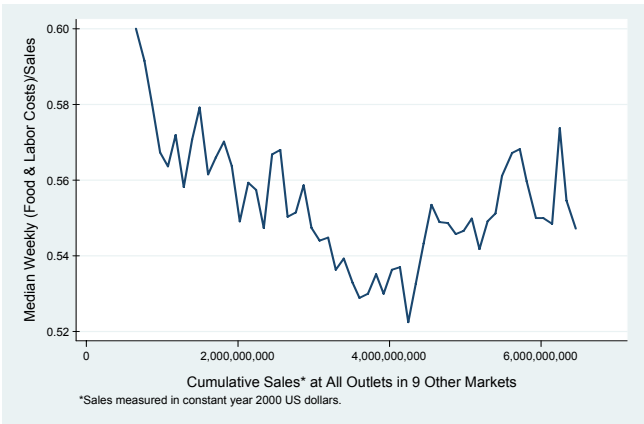
Country Developer



Other Franchisee Owners



All Other Country



4.d. Learning From Own Experience

4.d.i. Estimating Strategy & Model Specification

My empirical specification relies upon the classical learning curve framework that mathematically models the fact that average variable costs tend to decline with increasing experience but at a diminishing rate. To model this relationship, the classical learning curve specification is as follows:

$$\textbf{\textit{efficiency}}_{it} = \alpha_0 \, (\textbf{\textit{Cum Own Sales}}_{it})^{-\alpha 1}$$

where $\textbf{\textit{efficiency}}_{it}$ is a measure of cost of production for outlet i in week t, "α_0" represents the cost of producing the first unit, $\textbf{\textit{Cum Own Sales}}_{it}$ reflects outlet i's cumulative production through time t, and the parameter α_1 reflects the cost reduction accompanying greater production experience. In logarithmic form, one gets:

$$\ln \textbf{\textit{Efficiency}}_{it} = \ln \alpha_0 + \alpha_1 \ln \textbf{\textit{Cum Own Sales}}_{it} + \Sigma \beta \, \text{Controls}_{it} + e_{it}$$

Controls are introduced to identify the independent effect of outlet experience on operating efficiency. In alternative specifications, I control for (1) economies of scale during the current week (***Sales***) and (2) technological change or changes in food or labor costs over the study period with country-specific linear time trends (***Country***x***Time***). For all specifications, I employ a fixed-effects model that controls for unobserved outlet-level heterogeneity. In the presence of outlet-specific fixed effects that are correlated with the explanatory variables, fixed effects models are consistent but random effects models are not. To test for this correlation, I ran a Hausman test. A significant statistical difference between the results from these two specifications provided evidence that the fixed effects are correlated with the other explanatory variables, and dictated use of a fixed-effects model rather than a random effects model. I cluster residuals on outlets to flexibly

account for distinct error structures by outlet. Unless noted otherwise, all subsequent regressions are run using outlet-specific fixed effects with residuals clustered on outlets.

I also examine how the relationship between efficiency and own sales varies by country by allowing α_{1c} to denote 10 distinct country-specific coefficients. Note that the dependent variable and all experience variables are logged but for simplicity in reporting regression tables "log" is omitted. In Table 16 below I summarize the key variables employed. i indexes individual outlets, t indexes week of study period, and c indexes country.

Table 16: Variable Definitions

Variable	Definition
H	Number of outlets owned by franchisee, excluding outlet i
J	Number of outlets owned by other franchisees in country
D	Number of outlets owned by developer that aren't outlet i
K	Number of outlets in countries different from that of outlet i
efficiency$_{it}$	log [(food costs + labor costs)/Sales]
sales$_{it}$	log [Sales in constant year 2000 $US for i in period t]
Cum Own Sales$_{it}$	log [$\Sigma_{T=1 \text{ to } t-1}$ ***Sales***$_{iT}$]
Cum Same Franchisee Sales$_{it}$	log [$\Sigma_{i=1 \text{ to } H}$ ***Cum Own Sales***$_{it}$] – ***Cum Own Sales***$_{it}$
Cum Developer Sales$_{it}$	log [$\Sigma_{i=1 \text{ to } Dt}$ ***Cum Own Sales***$_{it}$] – ***Cum Own Sales***$_{it}$
Cum Other Franchisee Sales$_{it}$	log [$\Sigma_{i=1 \text{ to } Jt}$ ***Cum Own Sales***$_{it}$] – ***Cum Own Sales***$_{it}$
Cum Other Country Sales$_{it}$	log [$\Sigma_{i=1 \text{ to } Kt}$ ***Cum Own Sales***$_{it}$] – ***Cum Own Sales***$_{it}$
Country	Country dummy variable
Week$_t$	Time trend

4.d.ii. Learning Economies from Own Experience

Table 17 presents several models for estimating learning economies associated with own outlet experience. Column 1 presents the most basic model which merely estimates a single coefficient of learning economies derived from cumulative own outlet sales. This model assumes that learning is the same across all countries. It controls for economies of scale that are likewise assumed to be common across all countries. The results indicate the presence of both learning and scale economies; a doubling of sales experience is estimated to be accompanied by a 0.46% increase in efficiency (negative sign reflects the decrease in operating costs/sales dollar) whereas a doubling of sales during a given week is estimated to be accompanied by a 16.18% increase in efficiency.

In subsequent models depicted in Table 17, I explore the value of introducing country-specific time trends, relaxing the assumptions of common learning and scale economies across countries, and testing for the possibility that learning economies vary with the level of experience. The model estimated in Column 2 introduces country-specific time trends. This has the effect of quite significantly increasing the model's fit as reflected by the marked increase in Log Likelihood. The model in Column 2 also has the effect of notably increasing particularly learning but also scale economies by 320% and 15% respectively. Consequently, all subsequent models control for technological changes and changes in food or labor costs over the study period with country-specific linear time trends.

Table 17: Learning Economies from Own Sales Experience

Dependent= *Efficiency*	(1)	(2)	(3)	(4)	(5)
Cum Own Sales	-0.0046	-0.0147			
	0.0008**	0.0009**			
Cum Own Sales $_A$			-0.0112	-0.0123	-0.0129
			0.0024**	0.0023**	0.0023**
Cum Own Sales $_B$			-0.0040	-0.0031	-0.0029
			0.0023	0.0023	0.0024
Cum Own Sales $_C$			-0.0012	-0.0066	-0.0067
			0.0025	0.0021**	0.0021**
Cum Own Sales $_D$			-0.0204	-0.0231	-0.0231
			0.0024**	0.0023**	0.0023**
Cum Own Sales $_E$			-0.0423	-0.0379	-0.0362
			0.0025**	0.0023**	0.0023**
Cum Own Sales $_F$			-0.0257	-0.0126	-0.0129
			0.0060**	0.0064	0.0064*
Cum Own Sales $_G$			-0.0210	-0.0197	-0.0196
			0.0036**	0.0036**	0.0036**
Cum Own Sales $_H$			-0.0038	-0.0035	-0.0036
			0.0013**	0.0012**	0.0013**
Cum Own Sales $_I$			-0.0100	-0.0073	-0.0069
			0.0017**	0.0015**	0.0014**
Cum Own Sales $_J$			-0.0147	-0.0114	-0.0120
			0.0042**	0.0041**	0.0041**
Cum Own Sales $_{1st\$500K}$				-0.0005	
				0.0002*	
Cum Own Sales $_{post\$5M}$				0.0010	
				0.0002**	
Sales	-0.1618	-0.1863	-0.1840		
	0.0046**	0.0042**	0.0042**		
Sales x Country $_i$	No	No	No	Yes	Yes
Week $_t$ ***x Country*** $_i$	No	Yes	Yes	Yes	Yes
Observations	597,018	597,018	597,018	597,018	597,018
Number of Outlets	1,899	1,899	1,899	1,899	1,899
Log Likelihood	483,345	504,078	507,487	519,028	518,716

All regressions include outlet fixed effects; residuals are clustered on outlets.
Errors below: * significant at 5%; ** significant at 1%.

The model in Column 3 allows learning economies to vary by country. All coefficients estimated are signed correctly but countries B and C prove statistically insignificant. The effect of doubling outlet sales experience is associated with between a 0.12% and a 4.23% increase in efficiency (respectively for countries C and E). Once again, the Log Likelihood results indicate that this model is superior to that in Column 2. The initial review of data in the previous section suggested that significant country-specific differences existed. I should note in passing that in moving from the model in column 2 to Column 3, there is little impact on the estimated scale economies (-0.1840 vs. -0.1863).

In Column 4, the model both allows scale economies to vary by country and examines whether the efficiency gains to own outlet experience differ depending upon the level of outlet experience when the additional experience is gained. ***Cum Own Sales***$_{1st\$500K}$ captures the difference in learning economies for outlets with less than $500,000 in cumulative sales, representing between 30 and 160 weeks of outlet operation depending on the country in which outlet operates. ***Cum Own Sales***$_{post\$5M}$ relates to observations where the outlet has cumulative sales in excess of $5 million—greater than from 214 to 744 weeks of outlet operation depending on the country considered. During the initial period of operation the outlet does experience slightly higher rates of learning economies and in later stages the learning economies decline. The former finding likely stems from improvements that outlets discover early on through learning by doing. The latter could be a reduced rate of learning or alternatively an obsolescence of the facilities and the associated decline in efficiency. As learning economies are only fractionally larger during the early period of outlet operation and worse during the later period of the

outlet operation, in subsequent analyses herein I assume that learning economies (diseconomies) are invariant to the level of outlet experience.

Column 5 retains the assumption of country-specific scale economies that significantly increase the model's fit, based again on the log likelihood results. However, as the focus of this study is on learning economies, I do not report the detailed country-specific scale economies herein. The model in Column 5 will be retained in the subsequent analyses within this study.[41]

Combined, the results in Table 17 show that in all countries greater outlet-specific experience seems to reduce variable costs per dollar of sales. This occurs no matter the controls employed. However, the magnitude of such economies is highly sensitive to the inclusion of controls, particularly the country-specific linear time trend. Furthermore, in the best model (Column 5) each doubling of cumulative sales experience is accompanied by an efficiency gain (reduction in variable costs per sales dollar) of between 0.3% and 3.6%, depending on the country. This range of efficiency gain stemming from outlet-specific learning is much lower than the 7% found for pizza stores (Darr, Argote and Epple, 1995) and lower still than the 20% to 30% found in manufacturing (Dutton and Thomas, 1984, Argote & Epple, 1990, Benkard, 2000).

4.d.iii. Depreciation of Own Experience

In Table 17, I assumed that 100% of last week's experience remains available this week. While that may seem reasonable, it also has the implication that experience gained several years ago is as influential as experience gained last week. Put another way, the

[41] A table of pair-wise F-tests assessing the equivalence between different country-specific learning economies is presented in Appendix 7. This suggests that countries B, C, H, and I have similar learning rates to one another. Likewise, countries A and G form another group. Countries F and J form a third group. Finally, outlets in countries D and E each exhibit their own distinctive learning economies. Joint F-tests for these groupings support what is suggested in Appendix 7.

assumption of no depreciation implies that the estimated coefficient is the net effect of learning and forgetting. To estimate the percent of experience retained from week to week, I use the equation below to discount the prior week's experience and undertake a grid search to maximize the model's fit.

$$\textbf{\textit{*Cum Own Sales}}_{it} = \lambda\, \textbf{\textit{Sales}}_{it-1} + \lambda^{2}\, \textbf{\textit{Sales}}_{it-2} + \ldots + \lambda^{t-1}\, \textbf{\textit{Sales}}_{i1}$$

λ serves to depreciate the value of sales experience gained from the previous week and is assumed to be invariant across outlets and weeks. Consequently, last week's sales are multiplied by λ, sales from two weeks ago are multiplied by λ^2, sales from three weeks ago are multiplied by λ^3, and so on. These depreciated weekly sales figures are then cumulated. The result is to give greater weight to more recent experience and progressively less weight to increasingly distant experience. In short, this discounting introduces a notion of knowledge retention into the model. The methodology follows that employed in Darr, Argote and Epple. Throughout the remainder of this chapter, a "*" preceding an experience variable (e.g. ***Cum Own Sales***) indicates that the experience variable reflects knowledge as depreciating over time.

In Table 18, I present the results from using the estimating model from column 5 of Table 17. Each of the 5 estimating models in Table 18 is identical in all respects, except for the assumed rate of knowledge retention from week to week. Columns 1 to 5 reflect assumptions of 90%, 93%, 96%, 99%, and 100% retention of the prior week's stock of cumulated knowledge. Alternatively stated, these columns reflect 10%, 7%, 4%, 1%, and 0% weekly depreciation. The assumption of 96% retention (or 4% depreciation) of knowledge weekly best fit the data estimated and is retained in analyses hereafter.

Table 18: Learning Economies from DEPRECIATED Own Sales Experience

Dependent=*Efficiency*	(1)	(2)	**(3)**	(4)	(5)
***Cum Own Sales$_A$**	-0.0127 0.0028**	-0.0133 0.0028**	**-0.0136** **0.0027****	-0.0128 0.0024**	-0.0129 0.0023**
***Cum Own Sales$_B$**	-0.0076 0.0020**	-0.0070 0.0021**	**-0.0059** **0.0022****	-0.0040 0.0024	-0.0029 0.0024
***Cum Own Sales$_C$**	0.0037 0.0020	0.0023 0.0020	**-0.0002** **0.0021**	-0.0054 0.0021*	-0.0067 0.0021**
***Cum Own Sales$_D$**	-0.0252 0.0020**	-0.0259 0.0021**	**-0.0264** **0.0021****	-0.0246 0.0023**	-0.0231 0.0023**
***Cum Own Sales$_E$**	-0.0691 0.0032**	-0.0667 0.0031**	**-0.0611** **0.0030****	-0.0438 0.0025**	-0.0362 0.0023**
***Cum Own Sales$_F$**	-0.0156 0.0071*	-0.0153 0.0068*	**-0.0146** **0.0065***	-0.0133 0.0062*	-0.0129 0.0064*
***Cum Own Sales$_G$**	-0.0194 0.0035**	-0.0201 0.0035**	**-0.0207** **0.0036****	-0.0200 0.0037**	-0.0196 0.0036**
***Cum Own Sales$_H$**	-0.0035 0.0012**	-0.0037 0.0012**	**-0.0039** **0.0012****	-0.0036 0.0013**	-0.0036 0.0013**
***Cum Own Sales$_I$**	-0.0034 0.0017	-0.0041 0.0017*	**-0.0050** **0.0017****	-0.0063 0.0015**	-0.0069 0.0014**
***Cum Own Sales$_J$**	-0.0081 0.0043	-0.0088 0.0043*	**-0.0098** **0.0042***	-0.0113 0.0041**	-0.0120 0.0041**
% of prior week's knowledge retained (λ)	**90%**	**93%**	**96%**	**99%**	**100%**
Observations	597,018	597,018	**597,018**	597,018	597,018
Number of Outlets	1,899	1,899	**1,899**	1,899	1,899
Log Likelihood	519,194	519,512	**519,740**	519,134	518,716

All regressions include outlet fixed effects, country-specific linear time trends, country-specific controls for scale; residuals are clustered on outlets. Errors below: + significant at 10%; * significant at 5%; ** significant at 1%.

The substantive impact of 96% versus 100% knowledge retention is to increase the learning economies to own outlet sales experience for all countries except C, I and J. The most prominent change arises in country E which witnesses a rise from a 3.6% to a 6.1% improvement in efficiency with a doubling in outlet-specific experience. After two years almost all of the knowledge is lost. Thus, the 96% may seem a bit high but

nonetheless remains within what is intuitively reasonable regarding the retention of knowledge over time. The 96% weekly rate of retention diverges greatly from that of 83% found by Darr, Argote and Epple but is much closer to the 99% weekly rate estimated by Benkard in a study of learning and spillovers in aircraft production (Benkard 2000). Whenever a "*" precedes an experience variable hereafter it should be understood to represent 96% knowledge retention from week to week.

4.*d.iv*. Variability of Learning Economies from Own Experience

While Table 17 and Table 18 presented the expected average learning economies, they shed little light on the dispersion around those averages. With Table 19, one can inspect how widely the learning economies vary across outlets within a country. In so doing, I aim to understand the basis upon which the differences in country-specific learning economies estimated earlier rests. In short, I am asking to what degree are such differences a function of the distribution of outlet-specific learning economies and the possible influence of outliers?

In Table 19, I present the results of running 1,860 distinct outlet-specific OLS regressions on a sample of outlets that have been open more than 52 weeks and have at least 25 observations. In short, the sample is based on outlets that have ample experience from which to develop estimates of learning economies. Regressions are based on the below equation:

$$\ln \boldsymbol{efficiency}_t = \alpha_0 + \alpha_1 \ln \boldsymbol{*Cum\ Own\ Sales}_t + \beta_1 \ln \boldsymbol{Sales}_t + \beta_2 \boldsymbol{Time}_t + e_t$$

I should note that simple means calculated by country in Table 19 will certainly differ from those in Table 17 and Table 18 because Table 19 calculates simple means based on

estimates of ***outlet-specific*** (1) learning economies, (2) scale economies, and (3) linear time trends rather than those calculated at the country-level within a single regression equation.

Table 19: Variability of Outlet-Specific Learning Economies

			Coefficient Range of Estimated Learning Economies							
	# Outlets	Mean	<-0.15	-0.15 to -0.10	-0.10 to -0.05	-0.05 to 0.00	0.00 to +0.05	+0.05 to +0.10	+0.10 to +0.15	>+0.15
***Cum Own Sales**	**1,860**	**-0.013**	**77**	**69**	**211**	**864**	**490**	**70**	**27**	**61**
A ***Cum Own Sales**	253	0.013	18	8	15	97	57	11	14	33
B ***Cum Own Sales**	247	-0.016	16	10	26	103	62	18	8	4
C ***Cum Own Sales**	203	0.017	1	1	4	64	116	15	1	1
D ***Cum Own Sales**	271	-0.006	4	12	42	151	38	5	1	18
E ***Cum Own Sales**	205	-0.093	36	30	87	41	8	1	1	1
F ***Cum Own Sales**	52	-0.013	1	1	10	23	9	6	1	1
G ***Cum Own Sales**	77	-0.016		2	9	53	8	3		2
H ***Cum Own Sales**	352	-0.005		2	8	205	139	7		
I ***Cum Own Sales**	111	-0.008	1			75	34	1		
J ***Cum Own Sales**	89	-0.011		3	10	52	19	3	1	1

The learning economies are higher in Table 19 versus Table 18 for countries B, C, E, F, and G whereas such they are lower for countries A, D, H, I, and J. This is largely a function of the heterogeneity of outlets within different countries. For instance, in country A, 33 outlets experience a worsening of efficiency of more than 15% with each doubling of experience! Likewise, country C has 20 outlets that experience efficiency gains of more than 15% with each doubling of outlet experience! These findings do contribute to explaining the country-specific differences in learning economies estimated earlier and suggest an interesting future research opportunity to examine why such

outliers exist and to what degree these are related to ownership.[42] However, it seems unlikely that such country-specific differences stem merely from the impact of such outliers.

Taken together, these analyses of learning economies from own sales experience yield the following results. First, outlets derive benefits in the form of efficiency gains stemming from their own operating experience. However, these benefits are notably less than had been found in earlier studies of franchised retail chains (Darr, Argote & Epple). Second, such benefits differ across countries (as do the scale economies). This suggests the importance of country developer policies and country context as factors influencing the strength of learning economies. This view is further strengthened by the difference in the dispersion of outlet-specific estimates of learning economies by countries in Table 19. Third, experience was found to depreciate by 4% from one week to the next. Thus, experience gained more than 2 years ago has little effect on outlet efficiency.

4.e. Learning with Multiple Possible Sources of Experience

4.e.i. Estimating Strategy and Model Specification

In addition to estimating the benefits of one's own production experience, the learning curve framework has been extensively used to examine returns derived from related other experience, be it from affiliated production facilities (Thornton & Thompson 2001), associated product lines (Epple, Argote & Murphy 1996; Lapre & Van Wassenhove 2002), or even industry or competitor experience (Irwin & Klenow 1994). Accordingly, I incorporate the sources of experience identified in Figure 5 into the learning curve framework as follows:

[42] An extensive battery of analyses yielded no significant relationship between poor performance and outlet closings, timing of outlet operation, who owns the outlet, or the number of outlets owned.

$$\ln \textbf{\textit{efficiency}}_{it} = \ln \alpha_0 + \alpha_{1c} \ln \textbf{\textit{*Cum Own Sales}}_{it} + \alpha_2 \ln \textbf{\textit{*Cum Same Franchisee Sales}}_{it} + \alpha_{3c} \ln \textbf{\textit{*Cum Developer Sales}}_{it} + \alpha_4 \ln \textbf{\textit{*Cum Other Franchisee Sales}}_{it} + \alpha_5 \ln \textbf{\textit{*Cum Other Country Sales}}_{it} + \Sigma \beta \text{ Controls} + e_{it}$$

where α_{1c}, α_2, α_{3c}, α_4, and α_5 capture respectively learning economies from: own outlet sales, other commonly-owned outlet sales, country developer-owned outlet sales, other franchisee-owned outlet sales in the same market, and chain outlet sales in other countries. α_1 and α_3 are subscripted with c to denote country as I estimate country-specific learning economies for ***Cum Own Sales** as before and now for ***Cum Developer Sales**. In unreported regressions, I likewise explored such country-specific coefficients for ***Cum Same Franchisee Sales**, ***Cum Other Franchisee Sales** and ***Cum Other Country Sales**. These did not significantly enhance the model fit using a likelihood ratio test. Furthermore, such more complicated specifications ask too much of the information contained in the data. As before, note that the dependent variable and all experience variables are logged but for simplicity in regression tables "log" is omitted.

Table 7 reports estimating results for three different outlet owner types—single-outlet franchisees, multi-outlet franchisees, and country-developers—as the sources of experience available to each differ. For instance, single-outlet franchisees do not have access to experience from other commonly-owned outlets and country developers' commonly-owned outlet is captured in the variable ***Cum Developer Sales**. In columns 1 and 2, I focus on single-outlet franchisee owned outlets; in columns 3 and 4, I focus on multi-outlet franchisee owned outlets; and in columns 5 and 6, I focus on country-developer owned outlets. For each of these three groups, the first column assumes a common rate of learning economies from country developer outlets whereas the second

relaxes this assumption to allow for country-specific learning economies related to country-developer experience. In this section of the study, I draw extensively upon Table 20 findings to examine (1) the effect of other experience on learning from own experience; (2) learning from other commonly-owned outlets; and (3) learning from different owner outlets.

Table 20: Learning Economies from Different Sources for Different Owners

Sampled Outlets	**Single-Outlet Franchisees**		**Multi-Outlet Franchisees**		**Country Developer Owners**	
Dependent: Efficiency	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
****Cum Own Sales $_A$***	-0.0094	-0.0099	-0.0073	-0.0072	-0.0231	-0.024
	0.0058	0.0058	0.0035*	0.0035*	0.0145	0.0138
****Cum Own Sales $_B$***	-0.0008	0.0004	-0.0019	-0.0083	-0.0089	-0.0102
	0.0046	0.005	0.0052	0.0051	0.0038*	0.0035**
****Cum Own Sales $_C$***	-0.0036	-0.0038	-0.0104	-0.008	0.0043	0.0024
	0.0027	0.0027	0.0056	0.0068	0.0069	0.0076
****Cum Own Sales $_D$***	-0.0255	-0.0257	-0.0231	-0.0232	-0.0237	-0.0193
	0.0034**	0.0033**	0.0038**	0.0038**	0.0068**	0.0065**
****Cum Own Sales $_E$***					-0.0597	-0.059
					0.0030**	0.0030**
****Cum Own Sales $_F$***	-0.0134	-0.0127	-0.0123	-0.0143	-0.0018	-0.0028
	0.0143	0.0151	0.0078	0.0077	0.0195	0.0194
****Cum Own Sales $_G$***	-0.0136	-0.0155	-0.0105	-0.0141		
	0.0074	0.0074*	0.0047*	0.0044**		
****Cum Own Sales $_H$***	-0.0052	-0.0035	-0.0046	-0.0041	-0.0025	-0.0024
	0.0032	0.0025	0.0022*	0.0022	0.0016	0.0016
****Cum Own Sales $_I$***	-0.0195	-0.0172	0.034	-0.1327	-0.0054	-0.0062
	0.0044**	0.0050**	0.0365	0.0047**	0.0017**	0.0017**
****Cum Own Sales $_J$***					-0.0071	-0.0074
					0.0043	0.0042
****Cum Same Franchisee Sales***			**0.0074**	**0.0076**		
			0.0026**	0.0025**		
****Cum Developer Sales***	**-0.0342**		**-0.0132**		**-0.088**	
	0.0124**		0.0064*		0.0134**	
****Cum Developer Sales $_A$***		**0.0176**		**-0.0298**		**0.1242**
		0.0387		0.0150*		0.0733
****Cum Developer Sales $_B$***		**-0.0831**		**0.0377**		**-0.0274**
		0.0262**		0.0287		0.0134*
****Cum Developer Sales $_C$***		**-0.0427**		**0.2645**		**0.1399**
		0.0180*		0.0686**		0.0331**
****Cum Developer Sales $_D$***		**-0.1058**		**-0.0276**		**0.1841**
		0.092		0.0380		0.1089
****Cum Developer Sales $_E$***						**-0.1265**
						0.0079**
****Cum Developer Sales $_F$***		**-0.2278**		**-0.1552**		**-0.0861**
		0.0825**		0.0513**		0.0325**
****Cum Developer Sales $_G$***		**-0.0136**		**0.0035**		
		0.0175		0.0056		
****Cum Developer Sales $_H$***		**-0.1362**		**-0.0872**		**-0.0697**
		0.0574*		0.0232**		0.0227**
****Cum Developer Sales $_I$***		**-0.1679**		**0.266**		**-0.0302**
		0.0477**		0.0472**		0.0154
****Cum Developer Sales $_J$***						**-0.0794**
						0.0322*
****Cum Other Franchisee Sales***	**0.0634**	**0.0903**	**-0.0273**	**-0.0078**	**0.013**	**-0.0014**
	0.0150**	0.0171**	0.0129*	0.0184	0.0043**	0.0041
****Cum Other Country Sales***	**0.0106**	**0.0449**	**-0.0172**	**-0.0316**	**0.0761**	**0.0802**
	0.0432	0.0522	0.0204	0.0227	0.0161**	0.0169**
Sales x Country$_i$	Yes	Yes	Yes	Yes	Yes	Yes
Week$_t$ x Country$_i$	Yes	Yes	Yes	Yes	Yes	Yes
# Outlets	443	443	758	758	783	783
Observations	82,967	82,967	162,724	162,724	240,815	240,815
Log Likelihood	69,640	69,810	149,767	150,180	226,110	226,949

All regressions include outlet-specific fixed effects and clustered residuals. Errors below: * significant at 5%; ** significant at 1%.

4.e.ii. Learning from Own Experience when Other Experience is Present

Relative to results from Table 18 which omitted other possible sources of learning, we generally observe in Table 20 a decline in learning economies from own experience, suggesting that other sources of learning may displace own outlet learning where available. This notion is supported by the fact that single outlet franchisees tend to have greater learning economies from own experience than do either multi-outlet franchisee outlets or country developer outlets. This should not be surprising, given that single-outlet franchisees do not have access to other commonly-owned outlets by the franchisee. When comparing the learning economies from own experience for multi-outlet franchisee outlets to those for country developer outlets, no general trends seem to emerge.

4.e.iii. Learning from Other Commonly-Owned Outlets

Given the findings from section 4.e.ii., that multi-outlet franchisees do not learn as much from own outlet experience as single-outlet franchisees, one would expect learning economies to be present for experience gained at other commonly-owned franchisee outlets. Surprisingly, this is not so. What's more, estimates suggest learning diseconomies from commonly owned outlets for multi-outlet franchisee owners. This is particularly puzzling. To explain this finding, in Table 21 I examine whether learning of commonly-owned franchisee outlets varies by sequence of outlet opening? One might well expect that the first or second outlets opened by a franchisee do not benefit from subsequently opened outlets but such later outlets may benefit from experience gained at the outlets opened earlier. To control for possible differences in abilities of franchisee owners that have been allocated only one or a few outlets by country developers relative

to those with more, I limit my sample to franchisee owners that as of the end of the study period have four or more outlets. Also, I only include countries where there are at least 5 franchisee owners in 2003 so as to have a minimum of information in the data. I first

Table 21: Learning Economies by Order of Franchisee Outlet Opening

Sampled Outlets†	**4 country**	**A**	**B**	**D**	**H**
Dependent= *Efficiency*	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**
***Cum Own Sales*$_{1st\ Opened}$**	**-0.007**	**0.0995**	**-0.0202**	**-0.0053**	**-0.0096**
	0.0034*	0.0349**	0.019	0.0073	0.0026**
***Cum Own Sales*$_{2nd\ Opened}$**	**-0.0081**	**-0.0031**	**0.0024**	**-0.0192**	**-0.0032**
	0.0054	0.0084	0.0136	0.0105	0.0057
***Cum Own Sales*$_{3rd\ Opened}$**	**-0.0196**	**-0.0165**	**0.0478**	**-0.0284**	**-0.0145**
	0.0078*	0.0196	0.0442	0.0136*	0.0104
***Cum Own Sales*$_{4th\ Opened}$**	**-0.0103**	**-0.0171**	**-0.0022**	**-0.0127**	**-0.008**
	0.0037**	0.0064*	0.0059	0.0067	0.006
***Cum Same Franchisee Sales*$_{1st}$**	**0.0088**	**-0.0045**	**0.0106**	**0.0074**	**0.0083**
	0.0026**	0.0066	0.0105	0.0035*	0.0032*
***Cum Same Franchisee Sales*$_{2nd}$**	**0.0041**	**-0.0221**	**0.0128**	**0.0448**	**-0.0219**
	0.0147	0.013	0.0153	0.0293	0.0221
***Cum Same Franchisee Sales*$_{3rd}$**	**-0.0164**	**-0.0226**	**-0.0078**	**-0.0265**	**-0.0183**
	0.0256	0.0313	0.0441	0.0509	0.0463
***Cum Same Franchisee Sales*$_{4th}$**	**-0.0683**	**-0.0029**	**0.1185**	**-0.0313**	**-0.1125**
	0.0382	0.0379	0.1186	0.0635	0.0732
Sales		-0.1734	-0.1786	-0.1711	-0.1734
		0.0154**	0.0866*	0.0159**	0.0116**
Sales x Country A	-0.1355				
	0.0222**				
Sales x Country B	-0.1729				
	0.0836*				
Sales x Country D	-0.1677				
	0.0157**				
Sales x Country H	-0.1783				
	0.0113**				
Franchisee Sales	-0.0099	0.0008	-0.0039	-0.007	-0.0113
	0.0033**	0.0092	0.0125	0.0041	0.0036**
Outlets	177	24	33	65	55
Observations	40,467	8,664	4,304	14,695	12,804
Log Likelihood	35,141	11,289	5,001	10,651	10,352

All regressions include outlet-specific fixed effects and country-specific linear time trends; residuals are clustered on outlets. Errors indicated below: * significant at 5%; ** significant at 1%.

present findings related to the sample of the combined set of countries A, B, D, and H in Column 1. Then, in Columns 2 through 5, I present country-specific regression results

independently for comparative purposes. I limit my discussion below to the aggregate sample results presented in column 1.

At the outlet level, results indicate that up through the third outlet learning economies from own-outlet experience increase as franchisees sequentially open additional outlets. However, with the fourth outlet such learning economies decline. This would seem to suggest that outlet-specific learning benefits in some way from having opened earlier outlets. While insignificant, learning economies related to experience gained at other commonly owned outlets (***Cum Same Franchisee Sales***) increase with the number of the outlet opened by a franchisee owner. Unfortunately, the results reflected in Table 21 do not help to explain the earlier finding that experience at other commonly owned outlets are accompanied by learning diseconomies rather than learning economies.

One possible explanation for this puzzling finding is that franchise owners realize diseconomies related to managing a larger scale of outlets. As the owner cannot be in multiple locations simultaneously, she is not able to effectively oversee the daily operations of several outlets. Hence, the efficiency of those outlets declines. However, when I control for economies of scale related to sales in other commonly-owned outlets, learning diseconomies from experience at commonly-owned outlets persists.

There is another explanation that I am reluctant to accept. It could be that franchisee owners mistakenly transfer knowledge from one outlet to another that hinders outlet efficiency. For instance, if one outlet's customers all preferred to purchase food at the counter then the franchisee may configure a subsequently opened store accordingly. However, if customers of that subsequently-opened store preferred to purchase food at

the drive through window, then the outlet may well prove less efficient in meeting customers' needs. This is an unsatisfying explanation in that it relies upon mistakes by the franchisee owners and I am uncomfortable making such an assumption about human rationality (or irrationality).

4.e.iv. Learning from Different Owner Outlets

The three sources of experience from non-owned outlets explored herein are from other franchisee experience within the country of the focal outlet (****Cum Other Franchisee Sales***), country-developer experience within the country of the focal outlet (****Cum Developer Sales***), and experience gained within the other nine countries (****Cum Other Country Sales***).

I consider the influence of experience gained at country developer outlets (****Cum Developer Sales***) on the efficiency of franchisee outlets. I now return to discussing results in Table 20. In columns 1 and 3, I assume a common rate of learning economies across all countries for experience gained at country developer outlets. For both single-outlet and multi-outlet franchisees, experience gained at country-developer owned outlets has a significant efficiency-enhancing effect on franchisee outlets. Interestingly, a doubling of country developer experience is associated with a 3.4% gain in efficiency at single-outlet franchisees whereas it is associated with only a 1.3% gain in efficiency at multi-outlet franchisees. This is consistent with the fact that single-outlet franchisees cannot draw upon experience gained at other commonly-owned outlets and thus may rely more on the experience of the country developer to direct them. However, we observed earlier that common ownership for multi-outlet franchisees actually had either no effect or a negative effect on efficiency.

In columns 2 and 4, I obtain distinct country-specific estimates of learning economies to country developer experience for single and multi-outlet franchisees. By so doing, perhaps insight can be gained regarding the difference between single and multi outlet efficiency gains associated with country developer experience. With the exception of country A, all countries exhibit higher learning economies to country developer experience for single-outlet franchisees than for multi-outlet franchisees. For all countries in which learning economies to country developer experience for single-outlet franchisees are significant, there exist efficiency gains associated with greater country developer experience. However, in the case of multi-outlet franchisees, while countries A, F, and H also realized efficiency gains from country developer experience, countries C and I exhibit significant and sizable efficiency losses associated with greater levels of country developer experience. For both countries C and I, a doubling of country developer experience is associated with a 26% decline in efficiency. These findings concerning country developer experience reinforce the earlier findings that country developer actions and policies are critically important to how a country benefits from the experience it gains in foreign markets. Specifically, it suggests that experience gained at country developer outlets is more influential than that gained by franchisee outlets. This would seem to imply that country developers within the chain examined are vital to the development of foreign markets and exert considerable control and influence over franchisees in those markets, for better or worse.

Next, I consider whether experience gained at other franchisee owners affords learning economies to a focal outlet. While different franchisee owners may compete at some level for customers, the country developer can serve to diffuse valuable efficiency

enhancing practices discovered at one franchisee owner to another. For single-franchisee owners, other franchisee experience has a detrimental effect on efficiency. Each doubling of experience by other franchisees is associated with a 6-9% decrease in efficiency. For multi-outlet franchisees, it appears as though greater experience by other franchisee owners results in efficiency gains (albeit the significance is only at the 10% level and only when learning economies to country developer experience is common to all countries). The level of efficiency experienced at country developer owned outlets is unaffected by the experience of franchisees within the country. The fact that single-outlet franchisee efficiency is diminished with greater other franchisee experience while multi-outlet franchisee efficiency may be improved in the presence of other franchisees is a bit puzzling. It may help to balance out the earlier finding of diseconomies to common ownership to the extent that common ownership would seem to introduce gains from other franchisee experience unavailable to single-outlet franchisees.

Finally, experience gained at outlets within foreign markets does not seem to exert any statistically significant influence on franchisee-owned outlet efficiency. At the same time, country developer owned outlets may suffer efficiency losses as the experience in other countries increases. This may suggest that countries are vying for headquarters' resources and support; as the experience of other countries increases (especially where the depreciation factor implies that the experience considered is during the past two years) the same headquarters resources are no longer available to support country developer outlets. However, caution is advised here as the significance of this finding disappears when we account for country-specific differences in learning economies stemming from country developer experience.

4.f. Conclusion

This study has raised questions concerning the generalizability of the findings by Darr, Argote and Epple and others concerning the importance of ownership boundaries to the transfer of knowledge. In one franchised fast-food chain's foreign market operations, I find learning economies to own-outlet experience ranging between 0.5% and 6%, depending on the country. These findings are notably lower than earlier estimates. Additionally, I found 96% retention of experience from one week to the next versus the 83% found by Darr, Argote and Epple. Contrary to the prior research, experience from commonly-owned franchisee outlets actually is estimated as having detrimental effects on efficiency. With this study I have highlighted the important role of country developer experience within the chain studied herein. Rather than experience at commonly-owned outlets or even own-outlet experience, the experience that most improves outlet efficiency is experience gained at country developer-owned outlets. This suggests the importance that company/chain policies may have in the transfer of knowledge within affiliated operating units. It serves as a caution against the assumption that learning economies from more proximate sources of experience are always more influential than those from more distant sources.

It further cautions against assuming that knowledge always transfers more readily within firm boundaries than across them. The knowledge based view of the firm emphasizes the importance of common culture and shared values in facilitating knowledge transfer but seems to downplay the role of incentives for knowledge transfer. Contracts can introduce higher-powered incentives than those typically present within firm boundaries. If constructed appropriately, contracts might prove a superior alternative to common ownership in inducing agents to transfer knowledge.

These findings certainly reiterate the great opportunity for contributions from future research into how to exploit different mechanisms of control and governance to facilitate the transfer of knowledge and other key firm resources within foreign as well as domestic markets.

APPENDICES

Appendix 1: Sample Data for Ordered Logit Regressions

Country	ISO Symbol	Entry Year	Entry Mode	GDP/ Cap	Population (000)	Pop Growth	Foreign Market-Years	Region Market-Years	Econ Risk	Exchge Rate Risk	Politic Risk	Foreign Trade/ GDP	Trade with US (000)	Capital Acct	Head-quarters Distance	Market Attract
Argentina	ARG	1986	JV	$ 5,324	30,675	1.64%	364	8	7.9%	276.0%	0.3623	18.0%	$ 2,535,001	0	5,580	1986
Australia	AUS	1971	Subsidiary	$10,756	12,660	2.02%	10	1	2.4%	0.0%	0.4819	29.0%	$ 6,267,291	6	9,396	1985
Austria	AUT	1977	Subsidiary	$ 9,361	7,566	0.33%	100	1	2.6%	16.5%	0.4235	65.2%	$ 1,161,967	2	4,699	1984
Belgium	BEL	1978	contract	$10,204	9,822	0.27%	123	32	2.3%	13.9%	0.4325	109.5%	$11,542,942	5	9,682	1987
Brazil	BRA	1979	JV	$ 3,886	117,147	2.61%	147	1	4.3%	54.3%	0.0000	14.5%	$13,562,982	0	4,708	1984
Canada	CAN	1967	contract	$ 9,093	20,448	2.20%	1	1	2.1%	4.1%	0.4450	39.1%	$59,877,701	7	645	1965
Chile	CHL	1990	Subsidiary	$ 4,361	12,901	1.68%	534	20	13.7%	63.6%	0.1353	67.1%	$ 3,327,044	0	5,292	1988
China	CHN	1990	JV	$ 1,352	1,122,565	1.45%	534	130	5.1%	34.1%	0.0000	24.9%	$21,812,957	0	6,601	1988
Colombia	COL	1995	JV	$ 3,628	35,589	2.06%	834	44	4.5%	56.3%	0.4465	35.0%	$ 7,438,239	2	2,700	1982
Costa Rica	CRI	1970	contract	$ 2,732	1,687	3.46%	6	6	2.8%	5.6%	0.3058	59.5%	$ 832,547	7	2,211	1986
Croatia	HRV	1996	Subsidiary	$ 4,059	4,455	-0.01%	916	60	3.7%	25.1%	0.4669	93.0%	$ 233,600	2	4,789	1990
Cyprus	CYP	1997	JV	$12,239	739	1.29%	1,011	76	36.8%	3.8%	0.4853	99.1%	$ 266,453	0	5,949	1989
Czech Republic	CZE	1992	Subsidiary	$ 3,531	10,305	0.01%	639	25	12.0%	19.5%	0.5260	108.4%	$ 300,197	2	4,551	1989
Dominican Rep.	DOM	1996	contract	$ 2,400	7,722	1.93%	916	271	6.3%	45.3%	0.4178	95.8%	$ 6,413,879	2	1,922	1985
Ecuador	ECU	1997	JV	$ 2,888	11,862	2.46%	1,011	58	1.3%	72.2%	0.1237	53.9%	$ 3,125,000	5	2,954	1984
Egypt	EGY	1994	contract	$ 1,884	60,677	2.57%	766	12	2.8%	76.4%	0.0000	58.4%	$ 3,566,355	0	6,143	1991
El Salvador	SLV	1973	contract	$ 1,882	3,791	3.27%	31	20	3.3%	0.0%	0.3726	57.2%	$ 448,182	0	1,943	1989
Estonia	EST	1995	Subsidiary	$ 3,063	1,499	-0.18%	834	47	12.2%	5.0%	0.5592	167.9%	$ 64,271	8	4,469	1991
Fiji	FJI	1996	contract	$ 4,185	776	1.05%	916	222	3.3%	9.1%	0.4754	115.1%	$ 109,611	0	7,245	1997
Finland	FIN	1984	JV	$11,477	4,856	0.40%	289	87	3.4%	14.2%	0.5414	60.4%	$ 1,390,724	0	4,443	1984
France	FRA	1972	contract	$ 9,538	51,285	1.05%	20	2	21.3%	5.1%	0.5614	31.8%	$ 9,267,505	1	4,142	1980
Georgia	GEO	1999	JV	$ 439	5,100	-0.46%	1,232	113	7.3%	280.1%	0.1913	71.7%	$ 140,877	5	5,961	2002
Germany, West	DEU	1971	Subsidiary	$ 9,425	77,783	0.71%	10	1	0.2%	2.7%	0.3703	40.3%	$23,028,306	5	4,416	1977
Greece	GRC	1991	Subsidiary	$ 6,768	10,158	0.52%	584	190	2.6%	31.4%	0.3907	44.9%	$ 1,483,500	0	5,448	1987
Guatemala	GTM	1974	contract	$ 2,193	5,803	2.97%	44	26	2.2%	0.0%	0.3484	41.1%	$ 1,083,996	4	1,886	1985
Honduras	HND	1974	contract	$ 1,320	2,964	3.26%	44	26	3.5%	0.0%	0.0000	65.3%	$ 867,885	3	1,914	1989
Hong Kong	HKG	1975	JV	$ 5,675	4,320	2.11%	61	12	6.0%	6.5%	0.0000	171.1%	$ 7,782,317	9	7,801	1987
Hungary	HUN	1988	JV	$ 5,650	10,613	-0.02%	440	11	1.4%	15.6%	0.0000	76.2%	$ 501,242	0	4,827	1986

Appendix 1: Sample Data for Ordered Logit Regressions (Continued)

Country	ISO Symbol	Entry Year	Entry Mode	GDP/ Cap	Population (000)	Pop Growth	Foreign Market - Years	Region Market -Years	Econ Risk	Exchge Rate Risk	Politic Risk	Foreign Trade/ GDP	Trade with US (000)	Capi-tal Acct	Head-quarters Distance	Market Attract
Iceland	ISL	1993	contract	$12,618	259	1.02%	700	225	284.6%	26.8%	0.4981	61.2%	$ 308,098	1	2,960	1985
India	IND	1996	JV	$ 1,490	922,077	1.92%	916	222	3.0%	36.9%	0.5869	25.0%	$ 9,021,983	0	7,488	1990
Indonesia	IDN	1991	contract	$ 1,974	188,005	1.99%	584	143	3.8%	36.4%	0.0000	49.9%	$ 6,109,434	5	9,818	1990
Ireland	IRL	1977	Subsidiary	$ 5,836	3,228	1.13%	100	25	2.7%	11.9%	0.4110	96.7%	$ 1,287,798	0	3,670	1987
Israel	ISR	1993	contract	$ 9,843	4,937	2.49%	700	8	4.3%	53.1%	0.5224	75.0%	$ 8,570,998	2	6,198	1986
Italy	ITA	1985	Subsidiary	$10,561	56,697	0.26%	323	100	2.4%	33.9%	0.5017	45.8%	$18,054,305	2	4,822	1980
Jamaica	JAM	1995	Subsidiary	$ 2,469	2,547,086	0.82%	834	254	6.7%	80.5%	0.2819	131.7%	$ 1,862,993	7	1,765	1984
Japan	JPN	1971	JV	$ 7,307	104,345	1.04%	10	1	5.4%	0.0%	0.4891	20.3%	$41,704,714	1	6,311	1983
Jordan	JOR	1996	contract	$ 3,194	4,202	4.81%	916	31	10.5%	27.3%	0.0000	127.2%	$ 364,093	4	6,217	1991
Korea	KOR	1988	JV	$ 5,080	41,622	1.34%	440	106	5.8%	20.6%	0.4227	72.6%	$40,720,602	0	6,549	1987
Latvia	LVA	1994	Subsidiary	$ 2,332	2,586	0.05%	766	38	45.7%	143.1%	0.0000	129.5%	$ 118,070	8	4,564	1990
Lebanon	LBN	1998	contract	$ 2,901	3,430	1.05%	1,125	56	23.3%	43.8%	0.5501	64.3%	$ 597,814	6	6,094	1992
Lithuania	LTU	1996	Subsidiary	$ 1,735	3,673	0.22%	916	60	1.6%	123.8%	0.4491	117.7%	$ 78,455	6	4,703	1993
Macedonia, Yugoslavia	MKD	1997	Subsidiary	$ 2,270	1,993	0.65%	1,011	76	7.6%	85.5%	0.4649	78.1%	$ 135,234	0	5,167	1996
Malaysia	MYS	1982	JV	$ 4,011	14,097	2.35%	228	50	183.4%	7.7%	0.1732	110.9%	$ 2,868	1	9,274	1992
Malta	MLT	1995	Subsidiary	$ 8,073	374	0.62%	834	47	3.4%	13.0%	0.3346	207.1%	$ 188	0	5,172	1992
Mexico	MEX	1985	JV	$ 5,524	74,945	2.38%	323	134	10.8%	108.1%	0.1725	27.0%	$44,017	0	1,691	1975
Moldova	MDA	1998	Subsidiary	$ 2,473	4,442	0.52%	1,125	94	13.0%	1.5%	0.4782	129.1%	$ 70	0	5,187	1994
Morocco	MAR	1992	contract	$ 2,241	25,244	2.43%	639	6	4.5%	13.2%	0.1398	53.8%	$ 623	0	4,290	1989
Netherlands	NLD	1971	JV	$ 9,199	13,032	1.27%	10	1	1.7%	0.3%	0.6530	88.7%	$ 8,551,222	1	4,117	1983
New Zealand	NZL	1976	Subsidiary	$10,526	3,118	1.68%	81	16	6.6%	9.6%	0.3137	54.9%	$ 1,857,096	0	8,350	1989
Nicaragua	NIC	1975	contract	$ 2,629	2,320	3.18%	61	35	94.1%	0.0%	0.0000	71.8%	$ 914,484	2	2,049	1986
Norway	NOR	1983	Subsidiary	$12,177	4,115	0.45%	258	76	83.3%	8.0%	0.4602	78.2%	$ 4,457,795	0	4,048	1983
Pakistan	PAK	1998	JV	$ 1,472	132,485	2.36%	1,125	264	3.1%	26.8%	0.5027	37.2%	$ 2,546,384	0	7,087	1993
Paraguay	PRY	1996	JV	$ 2,269	4,878	2.89%	916	50	26.6%	48.2%	0.3780	111.7%	$ 1,047,382	0	5,773	1995
Peru	PER	1996	JV	$ 2,574	24,556	2.27%	916	50	12.0%	112.8%	0.3430	27.8%	$ 2,809,859	5	3,771	1986
Philippines	PHL	1981	JV	$ 1,879	50,940	2.81%	199	43	2.1%	5.5%	0.0000	52.0%	$ 6,897,949	0	8,144	1993
Poland	POL	1992	Subsidiary	$ 3,712	38,253	0.64%	639	25	3.7%	180.3%	0.1262	49.0%	$ 912,675	0	4,680	1986

Appendix 1: Sample Data for Ordered Logit Regressions (Continued)

Country	ISO Symbol	Entry Year	Entry Mode	GDP/Cap	Population (000)	Pop Growth	Foreign Market-Years	Region Market-Years	Econ Risk	Exchge Rate Risk	Politic Risk	Foreign Trade/ GDP	Trade with US (000)	Capi-tal Acct	Head-quarters Distance	Market Attract
Portugal	PRT	1991	Subsidiary	$ 7,478	9,923	0.15%	584	190	33.0%	27.0%	0.3852	75.2%	$ 2,045,872	0	4,000	1984
Romania	ROM	1995	Subsidiary	$ 1,645	22,739	0.13%	834	47	6.2%	184.0%	0.6474	51.9%	$ 549,352	0	4,151	1992
Singapore	SGP	1979	JV	$ 6,247	2,354	1.58%	147	31	49.7%	12.0%	0.0000	356.5%	$ 5,909,163	4	9,377	1992
Slovakiap	SVK	1995	Subsidiary	$ 4,475	5,345	0.44%	834	47	10.1%	35.8%	0.4605	124.9%	$ 178,327	1	4,789	1989
Slovenia	SVN	1993	Subsidiary	$ 8,331	1,892	0.22%	700	31	3.3%	91.4%	0.4032	119.3%	$ 150,627	1	4,727	1987
South Africa	ZAF	1996	Subsidiary	$ 3,098	40,256	1.88%	916	31	3.1%	19.6%	0.4448	50.1%	$ 4,958,653	1	8,673	1992
Spain	ESP	1981	JV	$ 7,390	37,488	1.02%	199	56	4.6%	10.8%	0.4822	33.5%	$ 8,135,150	0	4,192	1982
Sri Lanka	LKA	1998	contract	$ 2,734	18,699	1.26%	1,125	264	101.6%	18.8%	0.4049	80.0%	$ 1,684,694	1	8,982	1994
Sweden	SWE	1973	contract	$10,963	8,122	0.72%	31	5	2.6%	2.5%	0.4670	46.3%	$ 3,909,753	1	4,286	1982
Switzerland	CHE	1976	JV	$12,991	6,404	0.75%	81	19	5.0%	17.9%	0.4358	56.7%	$ 5,752,440	3	4,416	1981
Trinidad And Tobago	TTO	1994	contract	$ 7,060	1,175	0.37%	766	245	9.5%	23.2%	0.4694	83.1%	$ 1,404,349	2	2,670	1985
Turkey	TUR	1986	Subsidiary	$ 3,077	50,669	2.26%	364	1	4.5%	110.1%	0.4024	34.8%	$ 2,686,540	0	5,682	1989
Ukraine	UKR	1997	Subsidiary	$ 864	50,879	-0.04%	1,011	76	10.2%	187.4%	0.4187	93.9%	$ 876,318	0	5,064	1995
United Kingdom	GBR	1974	JV	$ 9,605	56,210	0.47%	44	9	1.6%	7.2%	0.3459	49.8%	$24,719,296	0	3,960	1979
Uruguay	URY	1991	JV	$ 4,602	3,106	0.62%	584	24	12.4%	134.2%	0.3855	46.3%	$ 408,430	8	5,648	1988
Venezuela	VEN	1985	JV	$ 6,374	6,545	3.03%	323	6	10.6%	18.9%	0.3700	44.0%	$14,549,028	2	2,500	1980

Appendix 2: Calculating the Influence of Interaction Terms

d Likelihood /d ***ForeignMarket-Years*** = $\beta_{\textit{ForeignMarket-Years}}$ + $\beta_{\text{ExchgeRateRisk X }\textit{ForeignMarket-Years}}$ X ***ExchgeRateRisk*** + $\beta_{\text{PoliticRisk X }\textit{ForeignMarket-Years}}$ X ***PoliticRisk***

= -0.229 + 0.006 X ***41.19*** + 1.59 X ***0.302***
[***ExchgeRateRisk*** & ***PoliticRisk*** situated at their mean values]

= -0.229 + 0.247 + 0.480 = <u>0.498</u>

However, the range of values over which [d Likelihood /d ***ForeignMarket-Years***]can vary is -0.229 to 2.490.

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d Likelihood /d ***RegionMarket-Years*** = $\beta_{\text{RegionMarket-Years}}$ + $\beta_{\text{EconRisk X RegionMarket-Years}}$ X ***EconRisk***

= -0.324 + -0.009 X ***18.36***
[***EconRisk*** situated at its mean value]

= -0.324 + -0.165 = <u>-0.489</u>

However, the range of values over which [d Likelihood /d ***RegionMarket-Years***] can vary is -0.325 to -2.885.

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d Likelihood /d ***ExchgeRateRisk*** = $\beta_{\text{ExchgeRateRisk}}$ + $\beta_{\text{ExchgeRateRisk X }\textit{ForeignMarket-Years}}$ X ***ForeignMarket-Years***

= -0.036 + 0.006 X ***5.64***
[***ForeignMarket-Years*** situated at its mean value]

= -0.036 + 0.034 = <u>-0.002</u>

However, the range of values over which [d Likelihood /d ***ExchgeRateRisk***] can vary is -0.036 to +0.007.

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d Likelihood /d ***EconRisk*** = β_{EconRisk} + $\beta_{\text{EconRisk X RegionMarket-Years}}$ X ***RegionMarket-Years***

= 0.035 + -0.009 X ***3.34***
[***RegionMarket-Years*** situated at its mean value]

= 0.035 + -0.030 = <u>0.005</u>

However, the range of values over which [d Likelihood /d ***EconRisk***] can vary is -0.015 to +0.035.

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d Likelihood /d ***PoliticRisk*** = $\beta_{\text{PoliticRisk}}$ + $\beta_{\text{PoliticRisk X ForeignMarket-Years}}$ X ***ForeignMarket-Years***

= -8.442 + 1.590 X ***5.64***
[***ForeignMarket-Years*** situated at its mean]

= -8.442 + 8.968 = <u>-0.526</u>

However, the range of values over which [d Likelihood /d ***PoliticRisk***] can vary is -8.442 to +2.879

Appendix 3: Jurisdictions Analyzed that McDonald's Entered by 1999

	Country	Country ID	# Stores	Population (Millions)	# Stores/ Million People	Area in Sq. Km (000s)	Entry Year
1	United States	USA	13,491	287.68	46.90	9,158.96	1955
2	Japan	JPN	3,891	127.07	30.62	364.50	1971
3	Canada	CAN	1,304	31.90	40.87	9,220.97	1967
4	United Kingdom	GBR	1,229	59.91	20.51	240.88	1974
5	Germany	DEU	1,211	82.35	14.71	356.68	1971
6	France	FRA	973	59.93	16.24	550.10	1972
7	Australia	AUS	726	19.55	37.14	7,682.30	1971
8	Brazil	BRA	584	179.91	3.25	8,456.51	1979
9	China	CHN	546	1,279.16	0.43	9,327.42	1990
10	South Korea	KOR	357	47.96	7.44	98.73	1988
11	Taiwan	TWN	350	22.45	15.59	36.00	1984
12	Spain	ESP	333	40.15	8.29	499.44	1981
13	Italy	ITA	329	57.93	5.68	294.11	1985
14	Mexico	MEX	261	103.40	2.52	1,908.69	1985
15	Sweden	SWE	245	8.88	27.60	411.62	1973
16	Philippines	PHL	236	83.00	2.84	298.17	1981
17	Netherlands	NLD	220	16.07	13.69	33.88	1971
18	Hong Kong	HKG	216	7.30	29.58	0.99	1975
19	Argentina	ARG	203	38.33	5.30	2,736.69	1986
20	Poland	POL	200	38.63	5.18	304.42	1992
21	Austria	AUT	157	8.17	19.22	82.73	1977
22	Malaysia	MYS	149	22.66	6.57	328.55	1982
23	New Zealand	NZL	148	3.91	37.87	267.99	1976
24	Switzerland	CHE	138	7.30	18.90	39.55	1976
25	Singapore	SGP	130	4.45	29.20	0.61	1979
26	Venezuela	VEN	129	24.29	5.31	882.05	1985
27	Puerto Rico	PRI	112	3.86	28.99	8.87	1967
28	Portugal	PRT	110	10.08	10.91	91.50	1991
29	Indonesia	IDN	105	231.33	0.45	1,811.57	1991
30	Thailand	THA	100	63.65	1.57	510.89	1985
31	Israel	ISR	99	6.03	16.42	20.62	1993
32	Russia	RUS	94	144.98	0.65	16,888.50	1990
33	Finland	FIN	90	5.18	17.36	304.59	1984
34	South Africa	ZAF	89	42.72	2.08	1,221.04	1996
35	Denmark	DNK	84	5.37	15.65	42.43	1981
36	Hungary	HUN	83	10.08	8.24	92.34	1988
37	Turkey	TUR	81	67.31	1.20	769.63	1986
38	Saudi Arabia	SAU	79	23.51	3.36	2,149.69	1993
39	Chile	CHL	70	15.50	4.52	748.80	1990
40	Czech Republic	CZE	68	10.26	6.63	77.28	1992

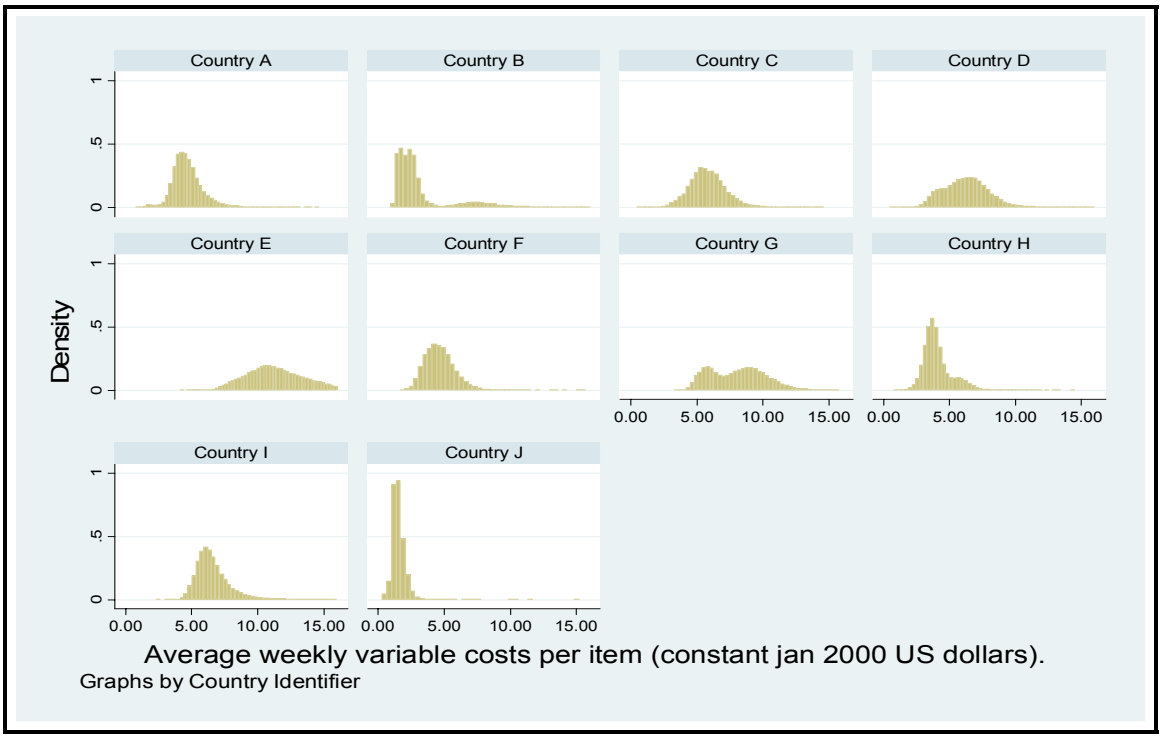
Appendix 3: Jurisdictions Analyzed that McDonald's Entered by 1999 (cont'd)

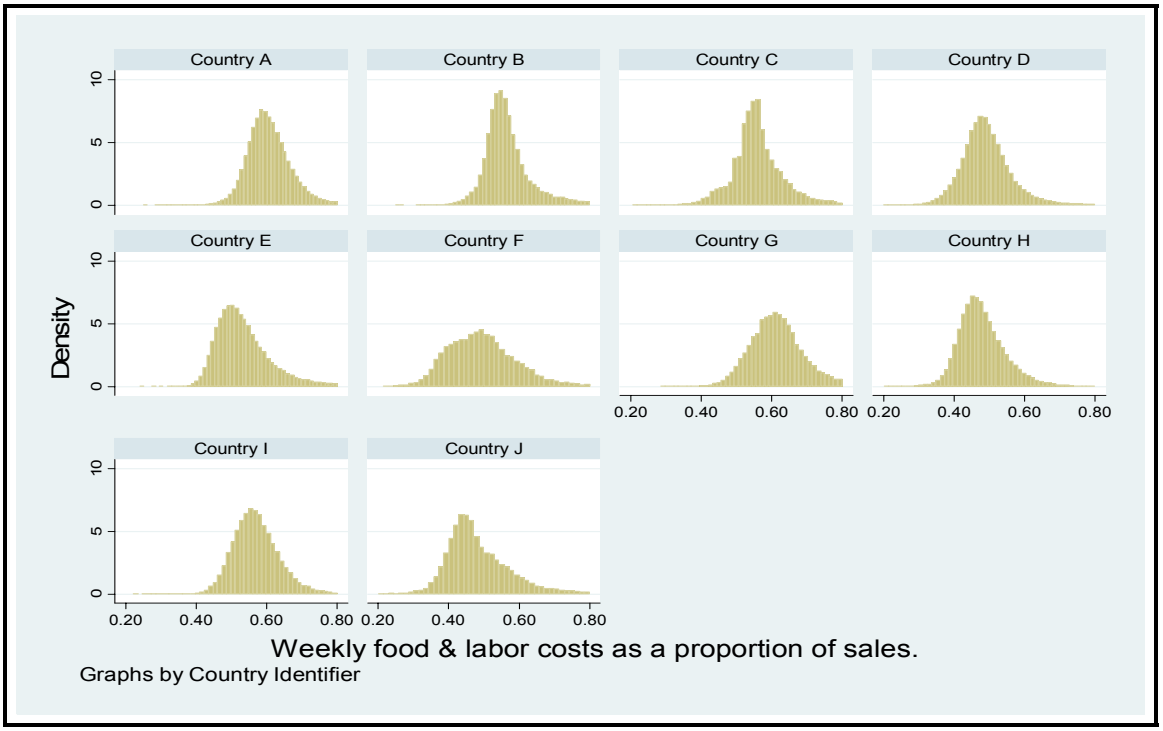
	Country	Country ID	# Stores	Population (Millions)	# Stores/ Million People	Area in Sq. Km (000s)	Entry Year
41	Ireland	IRL	67	3.88	17.25	68.89	1977
42	Norway	NOR	62	4.53	13.70	306.83	1983
43	Belgium	BEL	56	10.28	5.45	32.82	1978
44	Greece	GRC	54	10.65	5.07	128.90	1991
45	Ukraine	UKR	51	48.40	1.05	579.35	1997
46	Romania	ROM	48	22.32	2.15	230.34	1995
47	India	IND	46	1,034.17	0.04	2,973.19	1996
48	Egypt	EGY	40	73.31	0.55	995.45	1994
49	Guatemala	GTM	38	13.54	2.81	108.43	1974
50	Kuwait	KWT	37	2.11	17.52	17.82	1994
51	Panama	PAN	32	2.92	10.96	74.43	1971
52	Colombia	COL	28	41.01	0.68	1,038.70	1995
53	United Arab Emirates	ARE	28	2.45	11.45	83.60	1994
54	Costa Rica	CRI	24	3.84	6.26	51.06	1970
55	Uruguay	URY	22	3.39	6.50	175.02	1991
56	Bulgaria	BGR	21	7.62	2.76	110.55	1994
57	Pakistan	PAK	20	147.66	0.14	770.88	1998
58	Morocco	MAR	17	31.17	0.55	446.30	1992
59	Peru	PER	17	27.95	0.61	1,280.00	1996
60	Slovenia	SVN	17	1.93	8.79	20.12	1993
61	Croatia	HRV	16	4.39	3.64	55.92	1996
62	Ecuador	ECU	10	13.45	0.74	276.84	1997
63	Jamaica	JAM	10	2.68	3.73	10.83	1995
64	Dominican Republic	DOM	9	8.60	1.05	48.38	1996
65	Lebanon	LBN	9	3.68	2.45	10.23	1998
66	Malta	MLT	8	0.40	20.13	0.32	1995
67	Estonia	EST	7	1.42	4.94	42.27	1995
68	Honduras	HND	7	6.51	1.07	111.89	1974
69	Jordan	JOR	6	5.31	1.13	88.93	1996
70	Lithuania	LTU	6	3.60	1.67	64.80	1996
71	Latvia	LVA	6	2.37	2.54	62.05	1994
72	Paraguay	PRY	6	5.88	1.02	397.30	1996
73	Belarus	BLR	6	10.34	0.58	207.48	1996
74	El Salvador	SLV	5	6.35	0.79	20.72	1973
75	Oman	OMN	5	2.71	1.84	212.46	1994
76	Nicaragua	NIC	4	5.02	0.80	121.40	1975
77	Macedonia	MKD	3	2.06	1.46	25.43	1997
80	Georgia	GEO	2	4.96	0.40	69.70	1999
81	Sri Lanka	LKA	2	19.58	0.10	64.63	1998
82	Bolivia	BOL	0	8.45	0.00	1,084.38	1998
83	Trinidad & Tobago	TTO	0	1.11	0.00	5.13	1994

Appendix 4: Jurisdictions Excluded that McDonald's Entered by 1999

	Country	Country ID	# Stores	Population (Millions)	# Stores/ Million People	Area in Sq. Km (000s)	Entry Year
1	Cyprus	CYP	14	0.77	18.25	9.24	1997
2	Yugoslavia	YUG	13	10.66	1.22	255.40	1988
3	Macau	MAC	10	0.46	21.65	0.02	1987
4	Bahrain	BHR	9	0.66	13.71	0.69	1994
5	Guam	GUM	8	0.16	49.75	0.55	1971
6	Martinique	MTQ	7	0.42	16.58	1.10	1991
7	Qatar	QAT	7	0.79	8.82	11.00	1995
8	Guadeloupe	GLP	6	0.44	13.77	1.78	1992
9	Luxembourg	LUX	6	0.45	13.38	2.59	1985
10	Reunion	REU	6	0.74	8.06	2.52	1997
11	U.S. Virgin Islands	VIR	6	0.12	48.58	0.34	1970
12	Netherland Antilles	ANT	5	0.21	23.34	0.80	1974
13	Bahamas	BHS	4	0.30	13.55	10.01	1975
14	Andorra	AND	3	0.07	43.86	0.47	1984
15	Fiji	FJI	3	0.86	3.50	18.27	1996
16	Iceland	ISL	3	0.28	10.74	100.25	1993
17	Aruba	ABW	2	0.07	28.39	0.19	1985
18	French Polynesia	PYF	2	0.26	7.76	3.66	1996
19	New Caledonia	NCL	2	0.21	9.62	18.28	1994
20	N. Mariana Islands	MNP	2	0.08	25.87	0.48	1993
21	Brunei Darussalam	BRN	1	0.35	2.85	5.27	1992
22	Cuba	CUB	1	11.22	0.09	109.82	1986
23	Gibraltar	GIB	1	0.03	36.08	0.01	1999
24	Liechtenstein	LIE	1	0.03	30.45	0.16	1996
25	Monaco	MCO	1	0.03	31.26	0.00	1992
26	Samoa	WSM	1	0.18	5.60	2.83	1996
27	San Marino	SMR	1	0.03	36.06	0.06	1999
28	Suriname	SUR	1	0.43	2.31	156.00	1997
29	Barbados	BRB	0	0.28	0.00	0.43	1989
30	Bermuda	BMU	0	0.06	0.00	0.05	1985

Appendix **5: Histograms of Alternative Efficiency Measures**





Appendix 6: Estimations with Different Variable Cost Measures

Dependent Variable= Log of	Var Costs/ Sales	Var Costs/ Sales	Var Costs/ Sales	Var Costs/ Item	Var Costs/ Item	Var Costs/ Item
Experience Measure	LC Sales	$US Sales	$US Sales	Items Sold	Items Sold	Items Sold
Currency Units Employed	real LC	real LC converted to $US	LC converted to $US; then real	real LC	real LC converted to $US	LC converted to $US; then real
	(1)	(2)	(3)	(4)	(5)	(6)
Cum Own Sales$_A$	-0.0123	-0.0129	-0.0128	-0.0031	-0.0032	-0.0002
	0.0023**	0.0023**	0.0023**	0.0049	0.0037	0.0045
Cum Own Sales$_B$	-0.0030	-0.0029	-0.0044	0.0319	0.0224	0.0289
	0.0023	0.0024	0.0022	0.0050**	0.0035**	0.0034**
Cum Own Sales$_C$	-0.0034	-0.0067	-0.0069	0.0015	0.0008	-0.0014
	0.0013**	0.0021**	0.0020**	0.0041	0.0035	0.0054
Cum Own Sales$_D$	-0.0231	-0.0231	-0.0245	-0.0071	-0.0066	-0.0072
	0.0024**	0.0023**	0.0023**	0.0043	0.0035	0.0039
Cum Own Sales$_E$	-0.0324	-0.0362	-0.0403	-0.0345	-0.0323	-0.0336
	0.0019**	0.0023**	0.0025**	0.0030**	0.0029**	0.0045**
Cum Own Sales$_F$	-0.0136	-0.0129	-0.0217	0.0039	0.0021	-0.0050
	0.0066*	0.0064*	0.0064**	0.0073	0.0058	0.0064
Cum Own Sales$_G$	-0.0194	-0.0196	-0.0186	-0.0023	-0.0022	0.0062
	0.0036**	0.0036**	0.0034**	0.0048	0.0041	0.0054
Cum Own Sales$_H$	-0.0057	-0.0036	-0.0036	-0.0446	-0.0296	-0.0120
	0.0012**	0.0013**	0.0012**	0.0038**	0.0023**	0.0029**
Cum Own Sales$_I$	-0.0032	-0.0069	-0.0076	0.0057	0.0048	-0.0086
	0.0014*	0.0014**	0.0016**	0.0043	0.0037	0.0031**
Cum Own Sales$_J$	-0.0092	-0.0120	-0.0128	-0.0038	-0.0043	-0.0077
	0.0032**	0.0041**	0.0042**	0.0059	0.0039	0.0044
Observations	597,018	597,018	597,224	597,019	597,019	597,225
Outlets	1,899	1,899	1,899	1,899	1,899	1,899
Log Likelihood	515,074	518,716	511,725	277,450	451,292	319,932

All regressions include outlet fixed effects, country-specific linear time trends, country-specific controls for scale, assumes 100% retention of prior week's experience; residuals are clustered on outlets. Errors indicated below: * significant at 5%; ** significant at 1%.

Appendix 7: Tests of Sample Data Treatment and Composition

	Base Case	Left Censoring (thru '97)	Outlets that were not "cleaned up"	6 months Post-Transfer of Ownership	Outlets Closed During Study Period
Dep Variable=*efficiency*	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**
***Cum Own Sales*$_{censor}$**		-0.1070 0.0184**			
***Cum Own Sales*$_{clean}$**			-0.0015 0.00263		
***Cum Own Sales*$_{transfer}$**				-0.0004 0.0003	
***Cum Own Sales*$_{closed}$**					-0.0023 0.0025
***Cum Own Sales*$_{A}$**	-0.0129 0.0023**	-0.0185 0.0027**	-0.0128 0.0023**	-0.0129 0.0023**	-0.0126 0.0023**
***Cum Own Sales*$_{B}$**	-0.0029 0.0024	-0.0005 0.0038	-0.0028 0.0024	-0.0029 0.0024	-0.0028 0.0024
***Cum Own Sales*$_{C}$**	-0.0067 0.0021**		-0.0065 0.0021**	-0.0067 0.0021**	-0.0066 0.0021**
***Cum Own Sales*$_{D}$**	-0.0231 0.0023**	-0.0236 0.0032**	-0.0231 0.0023**	-0.0231 0.0023**	-0.0230 0.0023**
***Cum Own Sales*$_{E}$**	-0.0362 0.0023**	-0.0608 0.0026**	-0.0360 0.0023**	-0.0362 0.0023**	-0.0356 0.0023**
***Cum Own Sales*$_{F}$**	-0.0129 0.0064*		-0.0129 0.0064*	-0.0129 0.0064*	-0.0128 0.0064*
***Cum Own Sales*$_{G}$**	-0.0196 0.0036**		-0.0195 0.0036**	-0.0196 0.0036**	-0.0185 0.0037**
***Cum Own Sales*$_{H}$**	-0.0036 0.0013**		-0.0035 0.0013**	-0.0036 0.0013**	-0.0035 0.0013**
***Cum Own Sales*$_{I}$**	-0.0069 0.0014**		-0.0069 0.0014**	-0.0069 0.0014**	-0.0068 0.0015**
***Cum Own Sales*$_{J}$**	-0.0120 0.0041**		-0.0115 0.0041**	-0.0120 0.0041**	-0.0117 0.0041**
Observations	597,018	148,431	597,018	597,018	597,018
Stores	1,899	673	1,899	1,899	1,899
Log Likelihood	518,716	148,158	518,720	518,718	518,727

All regressions include outlet fixed effects, country-specific linear time trends, country-specific controls for scale, assumes 100% retention of prior week's experience; residuals are clustered on outlets. Errors indicated below: * significant at 5%; ** significant at 1%.

Appendix 8: Estimates of Food and Labor Costs Per Sales Dollar

Dependent Variable= log of	*Var Costs/ Sales*	*Labor Costs/ Sales*	*Food Costs/ Sales*
	(1)	(2)	(3)
$Cum\ Own\ Sales_A$	-0.0129	-0.0141	-0.0087
	0.0023**	0.0045**	0.0022**
$Cum\ Own\ Sales_B$	-0.0029	-0.0144	0.0053
	0.0024	0.0035**	0.0020**
$Cum\ Own\ Sales_C$	-0.0067	-0.0030	-0.0078
	0.0021**	0.0032	0.0023**
$Cum\ Own\ Sales_D$	-0.0231	-0.0249	-0.0181
	0.0023**	0.0037**	0.0022**
$Cum\ Own\ Sales_E$	-0.0362	-0.0314	-0.0378
	0.0023**	0.0032**	0.0023**
$Cum\ Own\ Sales_F$	-0.0129	0.0095	-0.0177
	0.0064*	0.0143	0.0077*
$Cum\ Own\ Sales_G$	-0.0196	-0.0210	-0.0131
	0.0036**	0.0051**	0.0029**
$Cum\ Own\ Sales_H$	-0.0036	-0.0008	-0.0020
	0.0013**	0.0035	0.0013
$Cum\ Own\ Sales_I$	-0.0069	0.0044	-0.0088
	0.0014**	0.0023	0.0018**
$Cum\ Own\ Sales_J$	-0.0120	-0.0167	-0.0011
	0.0041**	0.0086	0.0039
Observations	597,018	604,993	644,449
Outlets	1,899	1,899	1,910
Log Likelihood	518,716	196,296	412,973

All regressions include outlet fixed effects, country-specific linear time trends, country-specific controls for scale, an assumption of 100% retention of knowledge gained from the prior week's experience; residuals are clustered on outlets; Errors indicated below: * significant at 5%; ** significant at 1%.

Appendix 9: Variable Cost/Sales Estimates Using Weeks vs. Months as Unit of Time

Dep Variable=*Efficiency*	(1)	(2)
Unit of Time For Panel	**Weekly**	**Monthly**
***Cum Own Sales*$_A$**	-0.0129	-0.0097
	0.0022**	0.0019**
***Cum Own Sales*$_B$**	-0.0029	-0.0033
	0.0024	0.0013*
***Cum Own Sales*$_C$**	-0.0067	-0.0034
	0.0021**	0.0015*
***Cum Own Sales*$_D$**	-0.0231	-0.0182
	0.0023**	0.0016**
***Cum Own Sales*$_E$**	-0.0362	-0.0275
	0.0023**	0.0017**
***Cum Own Sales*$_F$**	-0.0129	-0.0046
	0.0064*	0.0044
***Cum Own Sales*$_G$**	-0.0196	-0.0086
	0.0036**	0.0025**
***Cum Own Sales*$_H$**	-0.0036	-0.0036
	0.0013**	0.0008**
***Cum Own Sales*$_I$**	-0.0069	-0.0049
	0.0014**	0.0010**
***Cum Own Sales*$_J$**	-0.0120	-0.0081
	0.0041**	0.0028**
Observations	597,018	144,033
Outlets	1,899	1,909
Log Likelihood	518,716	138,781

Both regressions include outlet fixed effects, country-specific linear time trends, country-specific controls for scale, an assumption of 100% retention of knowledge gained from the prior week's experience; residuals are clustered on outlets. Errors indicated below: * significant at 5%; ** significant at 1%.

Appendix 10: Descriptive Statistics For Experience Measures Assuming 100% Knowledge Retention

Variable	Stats	Total	A	B	C	D	E	F	G	H	I	J
efficiency	# Obs.	601,399	112,319	56,915	50,084	92,578	102,771	13,294	19,120	89,566	46,271	18,481
variable costs/sales	Mean	0.55	0.61	0.57	0.56	0.49	0.54	0.50	0.62	0.48	0.57	0.49
	St Dev	0.12	0.12	0.08	0.09	0.08	0.15	0.12	0.09	0.07	0.07	0.25
	Min	0.09	0.25	0.25	0.18	0.09	0.20	0.18	0.29	0.10	0.18	0.13
	Max	31.9	31.9	2.3	3.71	5.5	18.16	3.81	2.12	3.16	1.53	21.36
Cum Own Sales †	# Obs.	675,489	115,038	77,960	54,210	100,232	103,205	16,499	20,868	121,848	46,770	18,859
In yr 2000	Mean	$3.12	$3.01	$1.83	$0.71	$2.96	$8.19	$1.45	$1.32	$2.43	$1.81	$0.42
US $million	St Dev	$4.11	$2.24	$1.55	$0.67	$2.69	$7.33	$1.55	$1.33	$2.36	$1.30	$0.45
	Min	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
	Max	$40.40	$12.75	$9.48	$5.50	$16.74	$40.40	$8.36	$8.60	$16.53	$7.94	$2.46
Cum Same Franchisee Sales ₮	# Obs.	377,514	109,807	53,231	43,615	89,108		10,081	20,409	47,975	3,288	
in yr 2000	Mean	$11.11	$12.43	$4.43	$0.05	$16.16		$2.79	$13.82	$17.53	$0.57	
US $million	St Dev	$17.30	$15.90	$7.24	$0.22	$23.00		$3.89	$16.10	$18.70	$0.82	
	Min	$0.00	$0.00	$0.00	$0.00	$0.00		$0.00	$0.00	$0.00	$0.00	
	Max	$113.55	$71.00	$32.25	$2.11	$113.55		$17.82	$53.39	$80.62	$2.96	
Cum Developer Sales ₮	# Obs.	675,695	115,038	77,960	54,210	100,232	103,205	16,499	20,868	121,848	46,976	18,859
in yr 2000	Mean	$310.75	$16.50	$114.74	$25.11	$66.27	$1,291.84	$22.80	$1.87	$402.38	$166.46	$28.28
US $million	St Dev	$478.00	$8.53	$63.50	$14.60	$31.30	$413.00	$9.42	$1.51	$233.00	$91.70	$12.30
	Min	$0.00	$0.00	$17.73	$0.00	$11.23	$417.52	$1.75	$0.00	$0.00	$0.00	$0.00
	Max	$1,900.13	$32.91	$227.61	$52.92	$121.78	$1,900.13	$37.55	$4.52	$792.82	$323.07	$47.45
Cum Other Franchisee Sales ₮	# Obs.	675,695	115,038	77,960	54,210	100,232		16,499	20,868	121,848	46,976	
in yr 2000	Mean	$223	$467	$179	$85	$465		$29	$36	$247	$10	
US $million	St Dev	$237	$160	$116	$61	$275		$19	$26	$145	$7	
	Min	$0	$185	$14	$0	$37		$0	$0	$0	$0	
	Max	$1,015	$783	$397	$209	$1,015		$65	$99	$512	$22	
Cum Other Country Sales ₮	# Obs.	675,695	115,038	77,960	54,210	100,232	103,205	16,499	20,868	121,848	46,976	18,859
in yr 2000	Mean	$3,199	$2,634	$3,671	$4,289	$3,167	$2,022	$4,117	$3,488	$3,367	$3,647	$4,841
US $million	St Dev	$1,530	$1,540	$1,450	$1,330	$1,400	$1,190	$1,460	$1,550	$1,220	$1,350	$1,020
	Min	$391	$603	$769	$827	$738	$391	$823	$824	$823	$825	$2,056
	Max	$6,562	$5,796	$5,989	$6,352	$5,481	$4,714	$6,507	$6,507	$5,312	$6,299	$6,562

₮ Sales reflect cumulative sales measured in constant year 2000 US dollars.

Appendix 11: Descriptive Statistics for Experience Measures Assuming 96% Knowledge Retention

Variable	Stats	Total	A	B	C	D	E	F	G	H	I	J
efficiency	# Obs.	601,399	112,319	56,915	50,084	92,578	102,771	13,294	19,120	89,566	46,271	18,481
variable costs/sales	Mean	0.55	0.61	0.57	0.56	0.49	0.54	0.5	0.62	0.48	0.57	0.49
	St Dev	0.12	0.12	0.08	0.09	0.08	0.15	0.12	0.09	0.07	0.07	0.25
	Min	0.09	0.25	0.25	0.18	0.09	0.2	0.18	0.29	0.1	0.18	0.13
	Max	31.9	31.9	2.3	3.71	5.5	18.16	3.81	2.12	3.16	1.53	21.36
***Cum Own Sales**	# Obs.	675,592	115,038	77,960	54,210	100,232	103,205	16,499	20,868	121,848	46,873	18,859
In yr 2000	Mean	$220.82	$145.05	$179.78	$106.25	$246.48	$401.23	$146.89	$169.96	$253.60	$181.30	$65.87
US $1000s	St Dev	$140.58	$61.20	$84.64	$62.50	$123.17	$168.95	$66.88	$70.60	$115.00	$53.60	$39.86
	Min	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
	Max	$1,255.96	$519.78	$502.41	$531.55	$806.86	$1,255.96	$318.10	$444.69	$862.82	$380.39	$198.99
***Cum Same Franchisee Sales**	# Obs.	377,522	109,807	53,231	43,615	89,108		10,081	20,409	47,975	3,296	
in yr 2000	Mean	$812.67	$630.18	$420.53	$7.18	$1,030.49		$286.56	$1,726.96	$1,766.09	$66.07	
US $1000s	St Dev	$1,185.15	$866.48	$539.46	$29.65	$1,096.09		$332.12	$1,850.64	$1,735.75	$82.03	
	Min	$0.00	$0.00	$0.00	$0.00	$0.00		$0.00	$0.00	$0.00	$0.00	
	Max	$7,175.86	$4,024.27	$2,461.66	$286.24	$5,737.31		$1,193.99	$5,314.12	$7,175.86	$229.05	
***Cum Developer Sales**	# Obs.	672,689	115,038	77,960	54,020	100,232	103,205	16,499	18,147	121,848	46,881	18,859
in yr 2000	Mean	$197.51	$10.07	$101.28	$30.52	$45.76	$603.63	$15.93	$2.26	$384.62	$156.59	$40.78
US $100K	St Dev	$236.00	$3.64	$50.67	$14.98	$22.42	$118.00	$4.26	$0.64	$182.00	$45.66	$11.95
	Min	$0.00	$0.00	$9.28	$0.00	$7.23	$308.20	$2.00	$0.00	$0.00	$0.00	$0.00
	Max	$803.14	$18.02	$177.71	$62.57	$79.19	$803.14	$19.31	$2.95	$570.50	$206.10	$53.31
***Cum Other Franchisee Sales**	# Obs.	550,379	115,038	77,960	54,210	100,232		15,922	20,868	121,818	44,331	
in yr 2000	Mean	$216	$219	$195	$129	$398		$34	$46	$243	$12	
US $100K	St Dev	$166	$52	$105	$85	$229		$13	$28	$113	$4	
	Min	$0	$122	$8	$0	$33		$0	$0	$0	$0	
	Max	$838	$310	$365	$282	$838		$51	$113	$385	$15	
***Cum Other Country Sales**	# Obs.	675,695	115,038	77,960	54,210	100,232	103,205	16,499	20,868	121,848	46,976	18,859
in yr 2000	Mean	$221	$196	$243	$283	$211	$173	$281	$241	$212	$250	$324
US $million	St Dev	$91	$101	$81	$70	$79	$94	$84	$92	$67	$81	$51
	Min	$29	$47	$59	$63	$55	$29	$62	$63	$62	$63	$150
	Max	$399	$372	$350	$370	$313	$346	$396	$392	$310	$388	$399

Appendix 12: Pair-wise F-Tests of Equivalency of Country-Specific Learning Economies

	Country A	Country B	Country C	Country D	Country E	Country F	Country G	Country H	Country I
Country B	9.04** 0.0027								
Country C	3.98* 0.0461	1.41 0.2349							
Country D	9.76** 0.0018	36.53** 0	27.5** 0						
Country E	51.93** 0	101.64** 0	91.24** 0	16.06** 0.0001					
Country F	0 0.9963	2.15 0.1428	0.86 0.354	2.26 0.1331	11.84** 0.0006				
Country G	2.51 0.1136	14.94** 0.0001	9.67** 0.0019	0.65 0.4203	15.05** 0.0001	0.85 0.3578			
Country H	12.41** 0.0004	0.07 0.7949	1.57 0.2102	53.54** 0	155.32** 0	2.04 0.1538	17.52** 0		
Country I	4.83* 0.0281	2.04 0.1538	0.01 0.931	34.67** 0	1117.33** 0	0.84 0.3591	10.73** 0.0011	2.89† 0.0894	
Country J	0.03 0.864	3.66† 0.056	1.35 0.2463	5.4* 0.0203	26.07** 0	0.01 0.9118	1.9 0.1677	3.79† 0.0517	1.38 0.2401

For each country pair (box above), the top number is the result of F(1,1898) while the bottom number is the probability that the two estimated coefficients are equivalent. If there is greater than a 10% chance that the two learning economies between any country pair are equivalent, I have shaded the box. These country pairs represent instances where I cannot rule out the possibility that a single estimate related to the two countries could be used. However, I have retained the ten individual coefficients in subsequent estimates as this allows for greater flexibility when I introduce additional right hand side variables into the model.

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