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THE NEUTRALITY OF FUEL SURCHARGE

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ABSTRACT

Airline companies usually collect a fuel surcharge rather than increase airfares when fuel prices surge. This paper initiates a theoretical model to analyze the properties of fuel surcharges. We show that the role of fuel surcharges is neutral under the present fee collection scheme, which means that the fuel surcharge policy cannot help the airline industry improve its profits. In addition, the equilibrium results of air fares with fuel surcharge policies are identical to that of the fuel-cost-driven air fares without it. Therefore, the effects on social welfare are the same. We also offer an analysis to clear up the common misunderstanding in which the fuel surcharge policy was in favorable to the airline companies at the expense of the consumer welfare. The empirical facts from Chinese airlines support our theoretical findings.

INTRODUCTION

The growing market demand for Chinese airline transportation (the second largest market in the world) induces airline companies to increase their capacity considerably. Presently, Chinese airline companies are facing great challenges because of the growth of airline capacity and fuel prices. The surging fuel cost is the largest component of the airline companies' operating cost, constituting from 30% in the beginning of 2004 to 40% in June, 2006. In order to release some financial pressure from the fuel cost for airline companies, fuel surcharge policy is implemented in many countries such as U.S., Canada and China.

However, in China, the refined oil price is under government control, and the airline companies are mostly state-owned. For this reason, fuel surcharge policy has aroused violent public reaction and academic debates. The key controversies are: why there is co-existence of fuel surcharges and discounted airline tickets in the market and whether fuel surcharge policy is fiscal subsidy in favor of the airline companies at the expense of the consumer welfare.

We show in this paper that when airline market is competitive, surging fuel costs will drive up air fares. The role of fuel surcharge is neutral. That is, the same equilibrium will be achieved with or without fuel surcharge policy. The social welfare results are the same.

The structure of the paper is as follow: The first part is an introduction of the implementation of fuel surcharge policy and the objectives of this paper. In the second part, we theoretically analyze the market structure of the Chinese airline industry. This theoretical framework supports further discussion about the impact of fuel surcharge on the air fares, and the impact on social welfare. The third part is empirical facts of the Chinese fuel surcharge policy based on the theoretical model, which is consistent with our theoretical findings, thereby enabling us to identify the current fuel surcharge policy. The conclusions of this paper are in the fourth part. We propose some policy suggestions in the fifth part.

LITERATURE REVIEW

In developed countries, regulation policy is an important issue in the airline industry receiving considerable attention by economists. A substantial volume of research has been devoted to verifying and understanding the efficiency of government policy in airline industry. Douglas and Miller (1974) showed

that when the CAB (Civil Aeronautics Board) implements the regulation policy on the airline market, the regulators can indirectly control the quality by the selection of the price parameter.

Borenstein (1989) believed that the market power of an airline company relies on its control over airline routes and airports. An airline company's control over a fixed airline route and airports immediately determines its power over the Revenue Passenger Miles (RPM). Abramowitz and Brown (1993) investigated the relationships between air fairs and crowdedness, consumer preference of airline brands, entry costs and the number of airports in a city. The conclusion is that the American airline industry market is not competitive; rather, some fundamental factors could determine the monopoly power of airline companies. Borenstein and Rose (1994) first studied price discrimination on the same route, and connected it with market structure, especially market concentration. They found that the more competition exists the more price discrimination also exists. Similar results can be found in Hayes and Ross (1988) and Stavins (2001) using different data.

Borendten and Rose (1995) tested the impact of financial constraints on pricing in the American airline industry. They showed that bankruptcy effects have no impact on pricing behavior, yet because of financial constraints, airline companies are forced to choose lower ticket prices. Busse (2002) found that those financially-distressed companies prefer to start price wars more frequently. Peteraf (1995) considered the sunk cost in monopoly airline market and the impact of potential competitors on the pricing policies of airline companies. She found no proof to show that airline industry market is competitive, and that the sunk cost would have no effect on monopoly pricing. The key factors are potential entry cost and the reputation of discount decision. Although there is economy of scales in the airline market, it is still not competitive. Alam, Ross and Sickles (2001) studied pricing strategies and their effects on airline market efficiency using time series. Their evidences show that dynamic and competitive pricing policies do exist based on different structures of the air fares.

However, none of the existing literature studied the efficiency of fuel surcharge policy and its social welfare impact. We show in this paper that when airline market is competitive, the role of fuel surcharge is neutral. That is, the same equilibrium will be achieved with or without fuel surcharge policy. The social welfare results are the same.

BASIC FRAMEWORK

We will analyze Chinese airline market structure based on our theoretical framework and outline the strategic reaction of airline companies faced with external shock (surging fuel price). Gong and Fan (2006) indicate that Chinese airline market is competitive in recent years. We will analyze the impact of rising fuel cost on airline industry and the effects of fuel surcharge on air fares.

We assume that there are *n* airline companies in the airline market. Let q_i be the transportation quantity (total transportation quantity of passengers and goods) of the airline company *i*, and $Q = \sum_{i=1} q_i = q_1 + q_2 + ... + q_n$ be the total transportation quantity of the airline market, p is the market clearing ticket price. Assume that the consumers in the market are rational, the inverse-demand function of the market is

$$p(Q) = a - bQ. \quad (1)$$

When there is fuel surcharge, let p' be the nominal ticket price of the airline companies; and let A be the fuel surcharge on each passenger. Thus the air fares in the market are composed of two parts: $p = p' + A$,

where p is the total payment of consumers. The inverse demand function for ticket price p' in the market becomes

$$p'(Q) = a - A - bQ \tag{2}$$

Assume that each airline company has the same cost function $C_i(q_i) = K + (c_0 + c_1)q_i$, K is the initial entry cost for airline companies; c_0 is all unit variable cost in the actual operation of airline companies excluding the fuel cost. c_1 is the unit fuel cost; $(c_0 + c_1)$ is the unit variable costs for airline companies. A necessary condition for the survival of airline companies is $(c_0 + c_1) \le a$.

Gong and Fan (2006) have showed that present Chinese airline market is competitive. Airline companies compete with each other. Hence, each airline company maximizes its own profit. We first consider the case that there is no fuel surcharge. The profit maximization problem for company i is as following:

$$\max_{q_i} \pi_i = pq_i - (c_0 + c_1)q_i - K \tag{3}$$

s.t. $$p(Q) = a - bQ \tag{1}$$

We could solve each airline company's optimal transportation quantity: $q^*_{i\,o} = \dfrac{a - c_0 - c_1}{b(n+1)}$ (We use lower o to indicate all results without fuel surcharge), the whole airline industry's transportation volume: $Q^*_o = \dfrac{n(a - c_0 - c_1)}{b(n+1)}$, the equilibrium ticket price in the airline market is

$p^*_o = \dfrac{a}{n+1} + \dfrac{nc_0}{n+1} + \dfrac{nc_1}{n+1}$, and thus, each airline company's profit is $\pi_{io} = \dfrac{[a - (c_0 + c_1)]^2}{b(n+1)^2} - K$.

The results of the model show that in a competitive market, the equilibrium ticket price p^*_o (the total payment of consumers) depends on four variables: market demand, number of airline companies in the transportation market n, variable costs except for the fuel cost c_0 and the fuel cost c_1.

If the other three variables remain same, when the fuel cost c_1 rises, inevitably the equilibrium air fares in the airline market will go up. Consumers will have to pay more, but the profit of airline companies will go down because of less customers and higher fuel cost. That is:

$$\frac{dp^*_o}{dc_1} = \frac{n}{n+1} > 0 \tag{4}$$

and

$$\frac{d\pi_o}{dc_1} = -\frac{2[a - (c_0 + c_1)]}{b(n+1)^2} < 0 \tag{5}$$

Therefore, the surge of fuel cost necessarily results in loss of both the consumer's surplus and airline companies' profit, hence lowers the social welfare. The amount of loss depends on the degree of competition in the airline market ($\frac{n}{n+1}$), the market demand and elasticity (change of a and b), etc.

Fuel Surcharge Policy

In a competitive market, if the increased fuel surcharge goes directly into airline companies' business income, then the total payment of consumers including fuel surcharge will be $p = p' + A$, where p' is nominal ticket price and A is fuel surcharge. Hence the inverse demand function will become $p'(Q) = a - bQ - A$. We claim that the total payment of consumers with fuel surcharge policy should be as the same as that without fuel surcharge policy where the airline companies directly raise their ticket price p. That is called the neutrality of fuel surcharge. We provide analysis as following:

When there is fuel surcharge, the airline companies maximize their profit considering fuel surcharge income:

$$\max_{q_i} \pi_i = p' q_i - (c_0 + c_1) q_i + A q_i - K \quad (6)$$

s.t. $$p'(Q) = a - bQ - A \quad (7)$$

The optimal transportation volume for each airline company is $q^*_{i\,\mathrm{s}} = \frac{a - c_0 - c_1}{b(n+1)}$ (we use lower s to indicate all results with fuel surcharge), and the whole airline industry's transportation volume is: $Q^*_{\mathrm{s}} = \frac{n(a - c_0 - c_1)}{b(n+1)}$, the total payment of consumers in equilibrium is:

$p^*_{\mathrm{s}} = \frac{a}{n+1} + \frac{nc_0}{n+1} + \frac{nc_1}{n+1}$, the nominal ticket price in the market is:

$p'^*_{\mathrm{s}} = \frac{a}{n+1} + \frac{nc_0}{n+1} + \frac{nc_1}{n+1} - A$. Then, the profit of each airline company is:

$\pi_{i\mathrm{s}} = \frac{[a - (c_0 + c_1)]^2}{b(n+1)^2} - K$.

From the results of our model, we know that $p^*_{\mathrm{o}} = p^*_{\mathrm{s}} = p'^*_{\mathrm{s}} + A = \frac{a}{n+1} + \frac{nc_0}{n+1} + \frac{nc_1}{n+1}$. The total payment of consumers and market supply are independent from the air fares structure in equilibrium.

A Common Misunderstanding

The model analyses above shows that in a competitive airline market, a rise in fuel costs immediately results in a rise of air fares. Fuel surcharge is neutral, which means, with or without fuel surcharge policy, the consumers' real payments are the same.

Nevertheless, in the present airline market, public opinions usually regard fuel surcharge policy as governmental intervention in favor of the airline companies at the expense of the social welfare. The key reason of this misunderstanding is the mechanism of fuel surcharge collection.

People usually take fuel surcharge collected by airline companies as fuel taxation (in the form of specific tax levy), a governmental subsidy for the airline companies (tax transfer payments). Of course in this situation, fuel surcharge becomes one-time governmental subsidy to the airline companies in order to compensate for those companies' loss from the increasing fuel costs. Thus, the profit maximization problem for airline company *i* becomes:

$$\max_{q_i} \pi_{i\text{subsi dy}} = p'q_i - (c_0 + c_1)q_i + Aq^*_i - K \tag{8}$$

s.t. $$p'(Q) = a - bQ - A \tag{9}$$

where Aq^*_i is the taxation transfer from government which comes from fuel surcharge. Consequently, each airline company's optimal transportation volume is: $q^*_{i\text{ subsi dy}} = \dfrac{a - c_0 - c_1 - A}{b(n+1)}$ (we use lower *subsidy* to indicate all results in this case), and the whole airline industry's transportation volume is: $Q^*_{\text{subsi dy}} = \dfrac{n(a - c_0 - c_1 - A)}{b(n+1)}$, the nominal ticket price in equilibrium is:

$p'^*_{\text{subsi dy}} = \dfrac{a}{n+1} + \dfrac{nc_0}{n+1} + \dfrac{nc_1}{n+1} - \dfrac{A}{n+1}$, and the real payment of consumers is:

$p^*_{\text{subsi dy}} = \dfrac{a}{n+1} + \dfrac{nc_0}{n+1} + \dfrac{nc_1}{n+1} + \dfrac{nA}{n+1}$.

If a fuel surcharge is collected in the form of tax transfer payments, then the total payment of consumers is higher than the total payment without fuel surcharge:

$$p^*_{\text{subsi dy}} = \frac{a}{n+1} + \frac{nc_0}{n+1} + \frac{nc_1}{n+1} + \frac{nA}{n+1} > p^*_{\text{o}} = \frac{a}{n+1} + \frac{nc_0}{n+1} + \frac{nc_1}{n+1}. \tag{10}$$

There would be an additional $\dfrac{nA}{n+1}$ surcharge in the payment of consumers. Hence this kind of taxation subsidy will damage consumer's surplus. In addition, the market equilibrium volume will be less than that without fuel surcharge. i.e.

$$Q^*_{\text{subsi dy}} = \frac{n(a - c_0 - c_1 - A)}{b(n+1)} < Q^*_{\text{o}} = \frac{n(a - c_0 - c_1)}{b(n+1)} \tag{11}$$

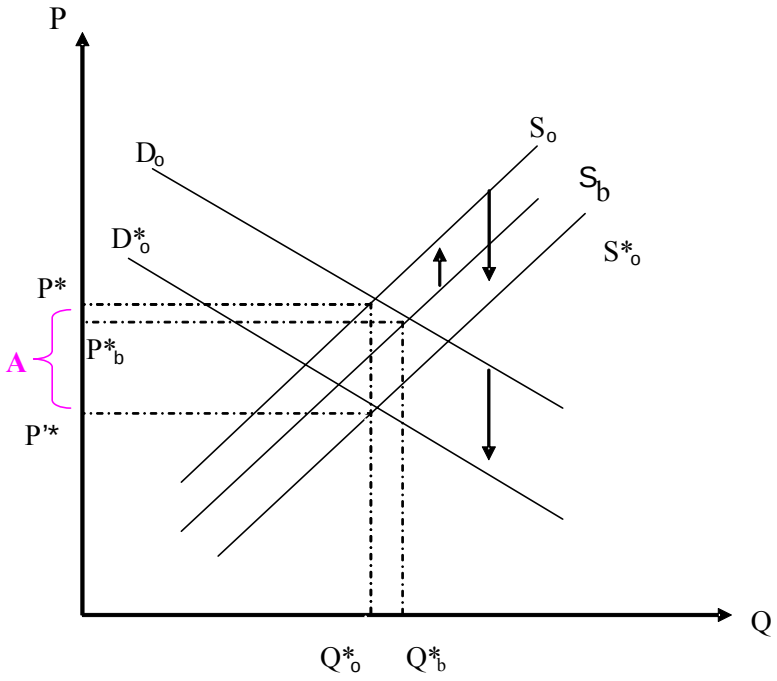
Hence the social welfare decreases in this situation. Furthermore, the profit of each airline company is: $\pi_{i\text{subsi dy}} = \dfrac{[a - (c_0 + c_1) + nA][a - (c_0 + c_1) - A]}{b(n+1)^2} - K$, which is higher than that without fuel surcharge: $\pi_{i\text{s}} = \dfrac{[a - (c_0 + c_1)]^2}{b(n+1)^2} - K$.

This model shows that fuel surcharge taxation policy can be considered a governmental administration intervention. It facilitates airline companies' collusion to acquire monopoly profit. Consequently, this taxation fuel surcharge will damage consumer surplus and social welfare.

Social Welfare

We analyze the social welfare of fuel surcharge policy above as following:

Figure 1: Social welfare analysis when fuel surcharge is collected as airline company income

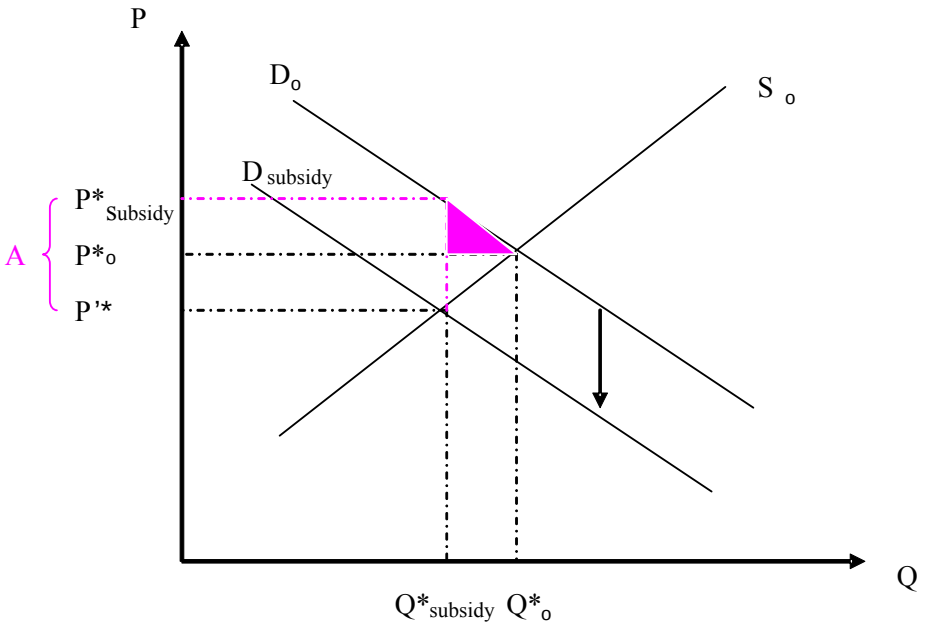


If fuel surcharge is government "tax transfer payments", for each airline ticket, a form of "fuel tax" is charged, and the market demand goes down; at the same time, the lump sum fuel surcharge is transferred to the airline companies and does not change their variable cost, hence the market supply remains the same, or the supply curve remains unchanged. Therefore, both the market transportation volume and price fall in equilibrium. Nevertheless, the total payment of consumers is the sum of equilibrium price and the fuel surcharge. Therefore, $P_{\text{subsi dy}} > P_{\text{o}}$. In this way, airline companies use fuel surcharge to raise the real air fares. Fuel surcharge in this way helps the realization of "price collusion" among the airline companies, by means of indirect governmental administrative power rather than spontaneous market power. Hence, not only the consumer surplus but also the social welfare is damaged. The lost social welfare is shown in the shadow area in Chart 2. The only winners are the airline companies who gain more profit.

EMPIRICAL FACTS

We know from our theoretical analysis above that rising fuel costs necessarily increase the total air fares, which is determined by the competitive market structure of Chinese airline industry. Under competitive market structure, the equilibrium results of the air fares with fuel surcharge policy are identical to that of the fuel-cost-driven air fares without fuel surcharge policy. Hence, whether to implement fuel surcharge policy has no effects on the Revenue Passenger Miles of the airline companies. Whereas if the fuel surcharge is a way of "fuel tax", airline companies will profit from that and the fuel surcharge will change the passenger kilometer income level.

Figure 2: Social welfare analysis when fuel surcharge is collected as "tax transfer payments"



We adopted the financial data of a large Chinese airline company to conduct empirical analysis. We selected production volume and financial data from January, 2004 to June, 2006. From the production data, we see that the transportation quantity of this airline company is growing steadily, Passenger Load Factor (PLF), remained stable, which shows that the airline market demand rose gently, independent from external factors (see Figure 3).

Here is an intuitive analysis of this airline company's financial data. General Administration of Civil Aviation of China started collection of fuel surcharge from August, 2005. Therefore, from the airline company's financial report, we can separately list real income and fuel surcharge income, thus we can calculate Revenue Passenger Miles (RPMs "including fuel surcharge" and "excluding fuel surcharge" Through comparison of different Revenue Passenger Miles (RPMs) in different time periods, we can eliminate the influence of seasonal factors while also having the effects of fuel surcharge. From August, 2004 to June, 2005, Revenue Passenger Miles (RPMs) on average "excluding fuel surcharge" is RMB$0.602/passenger kilometer, square deviation being 0.002; from August, 2005 to June, 2006, passenger kilometer income on average "including fuel surcharge" is RMB$0.610/passenger kilometer, square deviation being 0.002; over the same period, the Revenue Passenger Miles (RPMs)on average "excluding fuel surcharge" is RMB0.581/passenger kilometer, square deviation being 0.002. These results are consistent with our theoretical analysis, i.e. rising fuel cost increases average airfare. Even though the RPMs excluding fuel surcharge decreased, which means that the nominal ticket price decreased, it is compensated by fuel surcharge income. The total payment of consumers increased (See Figure 4).

Figure 3: Monthly Passenger Transportation Volume and Passenger Load Factor Level

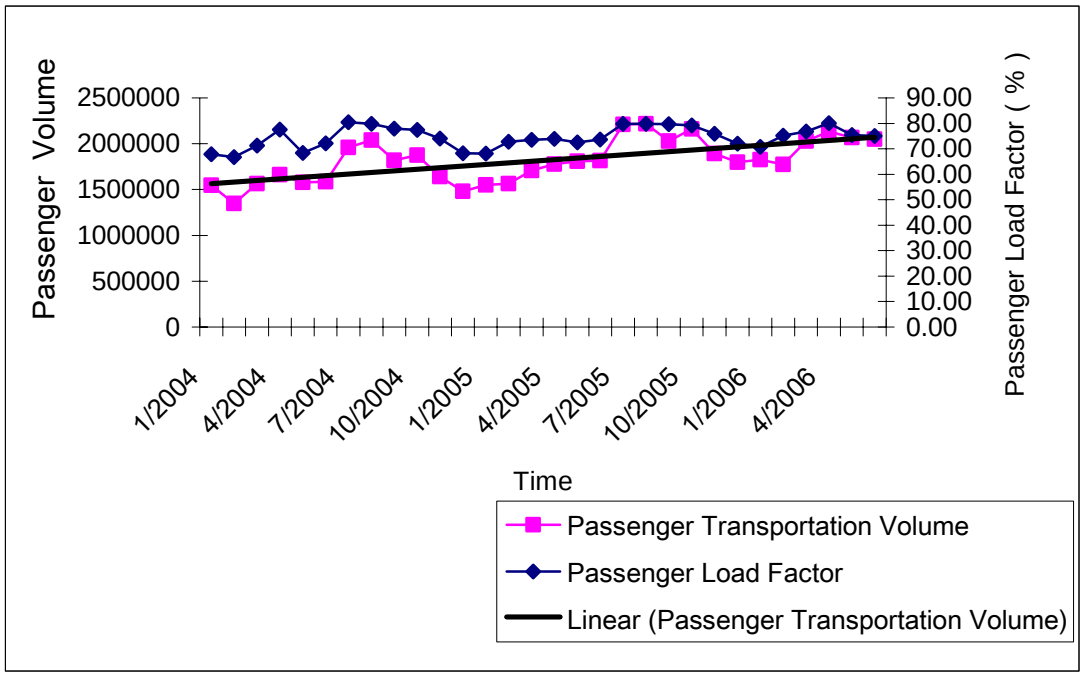
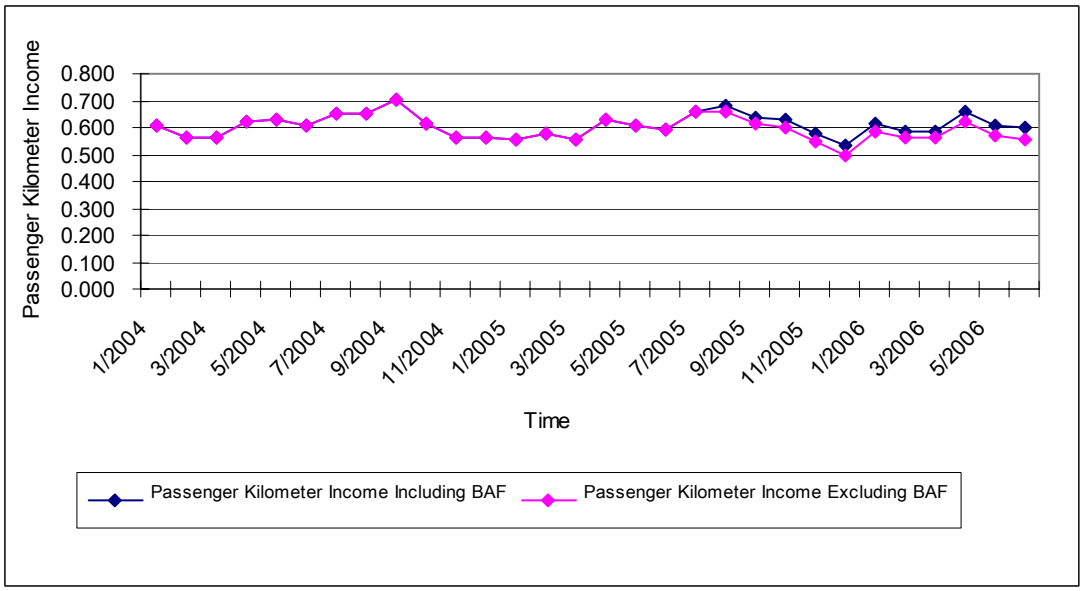


Figure 4: Passenger Kilometer Income of Some Big Airline Companies



CONCLUSIONS AND POLICY IMPLICATIONS

We show in this paper that when airline market is competitive, surging fuel costs will drive up air fares. The role of fuel surcharge is neutral. The same equilibrium will be achieved with or without fuel surcharge policy. The social welfare results are the same. We also offer an analysis to clear up the common misunderstanding in which the fuel surcharge policy is assumed to be in favor of the airline companies at the expense of the consumer welfare.

The Chinese government uses fuel surcharge policy to subsidize the airline companies. If the fuel surcharge is taxed the same as ticket income of airline companies, due to the neutrality of fuel surcharge, the results of fuel surcharge policy are equivalent to those without fuel surcharge policy in equilibrium. Therefore, fuel surcharge policy will have no effect of subsidizing airline companies but will incur lots of institutional cost and public discourse. In conclusion, in order to reduce the risk of fuel price fluctuation, the corporate income tax on the fuel surcharge should be exempted.

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THE RISE AND FALL AND RISE AGAIN OF THE UNITED STATES IPOS

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ABSTRACT

Initial Public Offerings (IPOs) of securities are among the most significant phenomena in the United States stock markets in recent years. In the so-called "New Economy" of the 1990's, IPO's ushered in the information technology revolution of the world. In this paper, the rise and fall of IPOs in the United States during 1990-2001 are examined. During 1996-2000, the first-day return of NYSE from 1996-2000 are found to be IPOs was on average 11.97%, while for the NASDAQ IPOs, were 63.33%, and for Internet IPOs it was a whopping 90.28%, resulting in first-day return for all IPOs of 15.24%. But the one-year return for all IPOs was a very modest 3.23%, and for the NASDAQ IPOs, it was only 11.49%. The regression results show consistently positive association between the first-day closing price and the return statistics. Finally, the paper discusses the ten recent trends that have become evident since the revival of the IPO market in the United States in 2004.

INTRODUCTION

Initial Public Offerings (IPOs) were the most prevalent form of security issues by firms wanting to raise capital in the United States during 1990-2000. The IPO phenomenon got a tremendous boost in the late 1990s from the popularity of Internet stocks. When Yahoo!, an online search engine, went public in March 1996, the investing public went agog with excitement, particularly the online traders. In the so-called 'bubble period' of 1998-1999, hardly a week went by when one or two IPOs, particularly Internet IPOs, did not appear in the capital market. In 1998, 5 IPOs had first-day returns of over 200%, while in 1999, 48 IPOs had that distinction, with 8 having returns of more than 400% on the first day. In 1999, 117 IPOs doubled their prices on the first day of trading. It was quite possible that without the IPOs, the stock market boom of the 1990s would not have been sustained for such a long time and with such vigor. In the bull market of '90s, it was the IPOs that created the climate of 'irrational exuberance,' particularly in the technology-heavy NASDAQ market (to quote Federal Reserve Board Chairman Alan Greenspan in a speech on December 5, 1996).

Unfortunately, with the stock market taking a sharp downturn after March 2000, many of these firms have succumbed to the market pressure and have gone out of business. However, of the many well-established companies in the United States that also entered the IPO market, most are still in business and a number of them are, in fact, thriving. Although the NASDAQ stock market had the largest number of IPO listings, the New York Stock Exchange (NYSE) also listed a significant number of IPOs. By studying the IPOs in these two markets, it will be possible to understand the stock market dynamics that shaped and molded the United States economy in a most fundamental way.

IPOs did not burst onto the scene, of course, in 1990. They had a long and checkered history before evolving into an effective tool for raising capital for companies wanting to go public. In their extensive data base of 4,753 IPOs during 1970-1990, Professors Loughran and Ritter listed 876 IPOs during 1970-72, 634 IPOs during 1980-82, and 1,315 IPOs during 1983-85 in the United States alone (Loughran & Ritter,1995).

The initial public offerings market fared worse in 1990, mainly because of Iraq's occupation of Kuwait in August of that year and the impending threat of the Gulf War to be launched by the United States. The dollar volume of IPOs in 1990 slumped, from 1989's already paltry level, to $10.2 billion. In the fourth

quarter of 1990, just 59 IPOs were issued – the lowest quarterly total in more than ten years. Additionally, the $3 billion raised in the fourth quarter was the lowest in six years. The White House admitted that the United States economy was in recession and predicted that the downturn would last until summer. The stock market ended its worst year since 1981, when the DJIA closed at 2,633 on December 31, 1990. After a slow start in January 1991 with 4 deals, there were 7 in February, 18 in March, and 28 in April. From then on the IPO market did not slow down again until September 1998. Investment bankers sold $16.4 billion in shares from 360 IPOs in 1991, just behind the 1986 record of $18.3 billion. An additional 454 already-public companies sold over $29 billion more in new shares, making 1991 a record year for seasoned equity offerings, according to IDD Information Services, Inc. Leverage buy-outs, which were the craze in the 1980s, almost died out as the 1990s' dawned.

The year 1999 was *The Year of the IPO*, particularly for Internet IPOs. The surge in the IPO market witnessed in late 1998 carried through all of 1999 and dried up only in March 2000 when the stock market in general, and the IPO market in particular, went sour. There were 544 public companies in 1999 were 544 in number, up from 373 in 1998, but less than the record set in 1996 of 872 companies. The IPOs in 1999 raised $69.1 billion, which was nearly double the 1998 total of $36.5 billion, and close to 40% higher than the previous record of $49.9 billion in 1996, according to the Securities Data Company of Thomson Financial. These figures include both large and small capitalization companies, but exclude closed-end mutual funds and real estate investment trusts. As of June 1999, IPOs soared an average 43% from their opening price, compared to an 8.5% gain of the S&P 500 stock index.

Many large and small companies went public that year, with Web-based and technology start-ups being the most prominent. The biggest IPO in the U.S. history occurred that year when UPS, in early November, raised $4.38 billion. Goldman, Sachs & Co. raised $2.72 billion in the U.S. when it went public in May. But price-performance wise, it was the software company VA Software Systems, Inc. which ruled the roost when its shares soared 697.50% on the first day of trading on December 9, heading the list of all-time first-day IPO price increases. MarketWatch. Com Inc. jumped 474% in its first day trading in January, and iVillage Inc. soared 232% on its debut in March of that year. IPOs such as Juniper Networks and Gadzoox Networks, which made their debut in June and July, rose 191% and 256%, respectively, on their first day of trading. Business-to-business IPO, FreeMarkets, Inc. rose 483% on its first-day trading in December 1999. According to the World Finance Net.Com, 117 or 23% of the year's IPOs had increased more than 100% in price on the first day of trading.

In Table 1, performance statistics of the best and worst 10 United States IPOs through December 31, 1999 are presented. Here we find that the top performer was an investment holding company called Internet Capital Group, with an incredible 5,567% increase in share price from the offer price over only five months. Next came Commerce One, another e-commerce company with a stock price increase of 2,707.1. All of the other best performers were either Internet companies, or software equipment or management companies like Brocade Comm.Systems and Vignett, respectively.

But not all IPOs performed well in 1999. Table 1 also shows the 10 worst performances by IPO firms during 1999. Here Value America topped the list, with a drop of 78% through December 31, from its offer price of $23.00, although its first-day price gain was 140%. Next was Insurance Management Solutions with a 77.3% price decline from its offer price of $11.00. Interestingly, almost all the companies in the 10 worst performers list were in the finance or manufacturing sectors, not in the Internet-related businesses. Also some IPOs, like Vitaninshoppe.com, 1-800-flowers.com, and Mothernature.com fell in price during the first day of trading.

Table 1: Best 10 and Worst 10 Annualized Performances of the IPOs in 1999

Company	Offer Price	% Change from Offer Price First Day's Trading	Dec. 31 1999
		A. The Best Performers	
Internet Capital Group (ICGE)	$12.00	103.7%	5567.0%
Commerce One (CMRC)	21.00	190.3	2707.1
Purchasepro.com (PPRO)	12.00	117.7	2479.7
VerticalNet (VERT)	16.00	183.6	1950.0
Brocade Comm. Systems (BRCD)	19.00	138.2	1763.2
Vignette (VIGN)	19.00	124.7	1615.8
Liberate Technologies (LBRT)	16.00	26.6	1506.3
Redback Networks (RBAK)	23.00	296.6	1443.5
Ariba (ARBA)	23.00	291.3	1442.4
Red Hat (RHAT)	14.00	271.4	1408.9
		B. The Worst Performers	
Value America (VUSA)	$23.00	140.0%	78.0%
Insurance Mgmt Solutions (INMG)	11.00	Unch.	-77.3
Stalia Terminals (STNV)	20.00	-8.1	-73.1
Trion Technology (TRIN)	7.00	22.3	-69.6
Argosy Education (ARGY)'	14.00	-4.0	68.3
Fashionmall.com (FASH)	13.00	Unch.	-65.4
Skechers USA (SKX)	11.00	-3.4	65.4
FlashNet Communications (FLAS)	17.00	156.6	63.6
HI-Q Wason (HIQW)	7.00	-4.4	62.4
Package Ice (ICED)	8.50	-2.9	61.8

Source: Securities Data Company/Thomson Financial.

Table 2 contains the 25 IPOs issued in 1999 with the highest first-day returns, along with their offer price and first-day opening and closing prices. VA Software Corporation – an Internet company – had an incredible first-day return of almost 700%, followed by a 525% first-day return for Foundry Networks, Inc. Of the four other IPOs with over 400% first-day returns, three were also Internet companies. There were 6 companies whose first-day returns were over 300%, followed by 14 companies with first-day gains over 200%. *As a matter of fact, there were no IPOs in this list whose first-day return was not 200% or more*. In total, 21 or almost 85% of the companies in Table 2 were *Internet-related* companies.

But the IPO market, especially the Internet stocks, went sour after March 2000. The NASDAQ was at its peak of 5,048.62 on March 10 and the DJIA was at its highest level on January 14, when it stood at 11,722.98. After that, the DJIA started to go downhill, just as the NASDAQ did after March 10. Even some of the IPOs which gained spectacularly in the first quarter, came tumbling down during the second quarter of 2000. For example, Palm Inc., the maker of handheld computer which went up to $165.00 per share during March, came down below its offer price of $38.00 during the first week of April 2000. By the end of 2000, the NASDAQ index fell by 51% and the DJIA by almost 8 % from their historic highs.

Table 2: Highest First-Day Gains of 25 IPOs, 1999

Company	Offer Price	First Day Opening Price	First Day Closing Price	First Day Return
1. Value Software Corp.	$30.00	$299.00	$239.25	697.50%
2. Foundry Networks, Inc.	25.00	109.00	156.25	525.00
3. FreeMarkets, Inc.	48.00	248.00	280.00	483.33
4. MarketWatch. Com	17.00	90.00	97.50	473.53
5. Akamai Technologies, Inc.	26.00	110.00	145.19	458.42
6. Blue Coat Systems, Inc.	24.00	110.00	126.38	426.58
7. Sycamore Networks, Inc.	38.00	270.00	184.75	386.18
8. Ask Jeeves, Inc.	14.00	72.00	64.94	363.86
9. Finisar Corporation	19.00	95.00	86.88	357.26
10. Crossroads Systems, Inc.	18.00	36.50	78.72	337.33
11. Priceline.com Inc.	16.00	81.00	69.00	331.25
12. Wireless Facilities, Inc.	15.00	37.50	62.00	313.33
13. WebMD Corp.	8.00	21.88	31.38	292.25
14. Ariba, Inc.	23.00	61.00	90.00	291.30
15. Experdia, Inc.	14.00	37.00	53.44	291.71
16. Red Hat, Inc.	14.00	46.00	52.06	271.86
17. Digital Impact, Inc.	15.00	34.00	55.50	270.00
18. Redback Networks, Inc.	23.00	67.25	84.13	265.78
19. KANA Software, Inc.	15.00	50.50	51.50	243.33
20. Quest Software, Inc.	14.00	20.50	47.00	235.71
21. Chinadotcom Corp.	20.00	45.75	67.11	235.55
22. iVillage, Inc.	24.00	95.88	80.13	233.88
23. Paradyne Networks, Inc.	17.00	50.00	56.25	230.88
24. Copper Mountain Networks	21.00	63.00	68.44	225.90
25. Extreme Networks, Inc.	17.00	54.00	55.38	225.76

Source: Hoover.com, 1999.

It was soon apparent that the Internet sector was simply overextended and real new ideas for products or services became few and far between. At the same time, money poured in from all quarters --institutional and individual alike – including venture capitalists. But most of the Internet companies had little or no earnings and would be in the red for the foreseeable future. As a result, the collapse of the Internet market was inevitable as the valuation of these stocks was simply too high. The question was when. And when the NASDAQ market did take a nosedive after March of 2000, it brought down the whole IPO market as well, including the Internet stocks. The total loss in the 'dot-com bubble' was put at $4 trillion, as reported in the Wall Street Journal (Feb 12 2002).

THE MELTDOWN AFTER MARCH 2000

Two thousand started as a strong market for IPO issuance when by February of that year, some 31 IPOs had already hit the market and 15 of them had enjoyed a first-day price increase of double their offer prices. But after the DJIA and NASDAQ reached their highest points, and the stock market bubble was about to burst, the IPO market started to go down. Most of the 67 IPOs brought to market before October 2001, traded below their offering prices. And when the terrorist attack on the World Trade Center came on "9/11," September of 2001 became the first month since December 1975 in which there were no IPOs, according to the SDC/ Thomson Financial. That company found 19 individual months with no IPO

offerings since 1970, and 18 of these 19 occurred between July 1973 and December 1975 during the worst recession the country has experienced since World War II.

The 'dot-com bust' led to the IPO downturn in 2000 when prices of many IPOs fell so sharply that they become virtually worthless. In Table 3, the performance of 30 IPO stocks during 2001-2002 whose first-day returns were over 200% are presented. When this table is compared to Table 2, we find that VA Software Corporation – the company with the highest first-day return – was also the company with the worst decline during this period. This company had a first-day offer price of $30.00, which shot up to $239.25 at the close of first day trading, but its 52-week low of $0.67 during 2001-2002 represents a 99.99% stock price drop. Similarly, Akamai Technologies was the fifth highest ranking firm in Table 2, but became the third worst performer in Table 3.

Table 3. Performance of 30 IPO Firms Where First-Day Returns Were Over 200 Percent

Company	First-Day Closing Price	52-Week Low (2001-2002)	% Decline from First-Day Closing
VA Software Corp.	$239.25	$0.67	-99.99%
Redback Networks	84.13	0.24	-99.99
Akamai Technologies, Inc.	145.19	0.56	-99.99
Crossroads Systems, Inc.	126.38	0.38	-99.99
Finisar Corp.	86.88	0.42	-99.99
Tut Systems, Inc.	57.50	0.41	-99.00
KANA Software	51.50	0.59	-99.00
Sycamore Networks	184.75	2.20	-99.00
FreeMarkets, Inc.	280.00	3.50	-99.00
Ask Jeeves	64.94	0.92	-99.00
Ariba	90.00	1.30	-99.00
Extensity, Inc	71.25	1.11	-98.00
Paradyne Networks, Inc.	56.25	0.95	-98.00
Marimba	60.56	1.10	-98.00
Blue Coat Systems, Inc.	126.38	2.50	-98.00
WebMethods, Inc.	212.63	4.25	-98.00
Turnstore Systems, Inc.	97.00	2.00	-98.00
Neoforma, Inc.	52.38	7.20	-86.00
Digital Impact	55.50	1.23	-98.00
IVillage	80.13	1.82	-98.00
Foundry Networks, Inc	156.25	4.08	-97.00
Chinadot Corp.	67.11	1.90	-97.00
TheStreet.com	60.00	1.91	-97.00
MarketWatch.com	97.50	3.88	-96.00
Extreme Networks, Inc.	55.38	2.33	-96.00
Copper Mountain Networks	68.44	3.17	-95.00
Red Hat	52.06	3.46	-93.00
Priceline.com	59.00	6.30	-89.00
Quest Software	47.00	7.30	-84.00
WebMD	31.38	4.25	-86.00

Source: Securities Data Company/ Thomson Financial.

Most of the other companies which had the best performances in 1999 also appear in Table 3's list of worst performances. For example, Redback Networks was number 2 on the worst performance list in Table 3, but was number 18 on the best performance list of Table 2. The best of the performers in Table 3

was Quest Software Corp. whose decline from its first-day closing price was 84.00%. It was number 13 in Table 2, with a first-day return of over 292%.

Table 4 contains stock returns for several time intervals for IPOs that occurred during 1996 – 2000. While the mean first-day return was very high for both NYSE and NASDAQ IPOs, they became negative for the second and third days. The Internet IPOs, however, remained positive during this period. While the mean one-month return was negative for the NYSE IPOs, it was positive for the NASDAQ IPOs. The reverse was true for one-year returns as the mean return of the NYSE IPOs was positive, but that of NASDAQ was negative. But both the Internet IPOs and All IPOs showed positive returns throughout the period, although the annual return was much lower than the first-day return

Table 4: IPO Returns 1996-2000

IPO Returns 1996 – 2000				
Term Period	NYSE n=300	NASDAQ N=99	Internet N= 177	All IPOs N= 576
First day	11.97	63.33	90.28	15.24
Second day	-0.04	-0.40	3.85	0.37
Third day	-0.17	-0.18	2.79	0.21
One month	-0.01	8.11	19.18	2.43
Six month	6.09	-6.47	45.69	5.37
1 year	11.49	-16.92	21.47	3.23

In table 5, the IPO calendar year returns of the United States IPOs for 1991-2000 are presented. In 1990, the mean return of the NYSE IPOs was 20.68%, but for the NASDAQ IPOs it was –18.08%, resulting in a return of 9.01% for all the IPOs covered by this study. In 1999 – the so-called 'bubble' year – it was 6.6% for the NYSE IPOs, 29.97% for the NASDAQ (without Internet) IPOs, 45.75% for the Internet IPOs, and 23.05% for all the IPOs sampled. But in 2000, that all came crashing down, with a 1.37% for the NYSE IPOs, -64.37% for the NASDAQ IPOs, -73.44% for the Internet IPOs and –34.55% for all the IPOs.

Table 5: Calendar Year Returns of All IPOs 1990-2000

Year	NYSE Mean	NASDAQ Mean	Internet Mean	All IPOs Mean
1990	20.68	(18.08)	-	9.01
1991	7.89	34.78	-	15.62
1992	62.51	(9.35)	-	40.88
1993	3.78	52.12	-	18.33
1994	13.52	44.84	-	22.95
1995	40.45	51.84	-	43.87
1996	42.83	31.83	39.67	39.56
1997	(3.59)	(36.56)	59.45	8.06
1998	(1.13)	80.32	184.87	70.71
1999	6.61	29.97	45.75	23.05
2000	(1.37)	(64.37)	(73.44)	(34.55)

Table 6 contains selected asset management ratios for the NASDAQ IPO sample firms during 1990-2000. The mean inventory turnover ratio jumped from 6.59 in 1990to 18.86 in 2000. However, the mean fixed asset turnover ratio declined considerably during the same

Table 6: Selected Asset Management Ratios of NASDAQ IPOs, 1990 – 2000

	Inventory Turnover		Fixed Asset Turnover		Working Capital Turnover	
Year	Mean	Median	Mean	Median	Mean	Median
1990	6.59	6.39	13.60	9.55	2.07	2.04
1991	8.77	5.36	6.33	4.81	0.18	1.13
1992	7.64	5.48	5.48	5.76	2.00	1.76
1993	9.29	7.54	15.02	13.89	5.48	2.10
1994	14.22	13.11	14.24	12.75	4.39	2.21
1995	16.62	15.35	14.41	13.74	4.06	1.73
1996	16.73	15.98	11.58	10.06	13.36	12.17
1997	15.44	13.31	9.25	6.73	13.48	12.09
1998	14.70	13.64	6.53	4.88	(9.69)	(11.91)
1999	17.16	15.95	6.01	5.86	(4.03)	(3.14)
2000	18.86	17.17	6.75	5.66	1.08	1.03

period – from 13.60 to 6.75. This decline was also present in the firm's working capital turnover when in 1990 it was 2.07, but became negative in both 1998 and 1999, and increased slightly in 2000. This deterioration of both fixed asset turnover and working capital turnover indicates that both sales and total assets of many NASDAQ companies started to shrink long before the stock price of these companies plummeted during 2000-2001.

In Table 7, the IPO sample was partitioned into cold, cool, hot, and extra-hot IPOs, following the methodology of Krigman, Shaw and Womack (1999). The first-day mean excess return of extra-hot IPOs was 121.5%, while that of cold IPOs it was –3.8%. But for one-month excess return it was only 6.9% for the while for the cold IPOs it was again –3.8%. For the six-month excess return, the mean was again high for the extra-hot IPOs and positive for the cold IPOs. But the one-year excess return for the extra-hot IPOs was a moderate 12.3% and a mere 1.4% for the hot IPOs and both the cold and cool IPOs showed negative returns. Thus the findings in Table 7 support the findings of Krigman et.al. That is, that the first-day winners continue to be winners over the first year, and the first-day losers continue to be losers during the same period.

Table 7: IPO Returns Partitioned By Mispricing

Cold (<= 0%) n=27	Cool (0%-10%) n=23		Hot(10%-60%) N=59	ExtraHot(>60%) n=73
First Day Mean Return				
	-0.038	0.053	0.412	1.215
Median	-0.016	0.046	0.379	1.016
One Month Mean Return				
Mean	-0.038	0.029	0.083	0.069
Median	-0.028	0.014	0.042	0.054
Six Month Mean Return				
Mean	0.029	-0.041	0.018	0.315
Median	0.019	-0.026	0.0005	0.252
One Year Mean Return				
Mean	-0.032	-0.094	0.014	0.123
Median	-0.021	-0.055	0.027	0.119
% Change From Filling Price				
Mean	0.035	0.112	0.294	0.936

Table 8 contains a regression analysis of the sample IPOs. Here, the first-day closing price (FC) was significantly associated with annual returns. Offer price (OP) was significant only for the first-day return and the sign was negative, indicating that lower offer price was a contributing factor for high first-day returns. Asset size (AS) was significant for the longer periods of time, namely, six-month and one-year returns. The debt ratios (DR) were significant in four out of six regression equations, but the signs were mixed. The asset leverage ratio (AL) was significant in two equations, namely, for the second-day and third-day equations, but not for the longer periods of time. Market capitalization (MC) was not significant at all in any of the six equations.

In Table 9, a dummy variables to indicate whether the firms were listed on the NYSE (dummy variable = 0) or to the NASDAQ (dummy variable = 1) market was added to the regressions. Here, again, the first-day closing price was significant in all the six regressions. The offer price was significant in the first-day return only regression. The asset size variable was significant for the longer periods of time, namely returns for six- month and one year. The debt ratio was significant again in four out of six equations, but the signs were significant only in two equations—for the first-day and second-day returns. But the market capitalization variable was not significant in any of the equations. The dummy variable, however, was significant for the longer periods.

Table 8: Multiple Regression Equations of IPO Returns as the Dependent Variable (Without Dummy Variables)

Dependant Variable	Independent Variables						R^2
	MC	OP	FC	AS	DR	AL	
First Day Return	0.006 (0.21)	-0.318* (5.-43)	0.106 (1.814)	-0.002 -0.063	0.005 (0.200)	0.013 (0.521)	.669
Second Day Return	0.046 (0.58)	0.019 (0.139)	0.040* (1.304)	-0.057 (0.780)	0.118* (1.839)	0.174* (2.687)	.425
Third Day Return	-0.003 (-0.03)	-0.112 (-0.79)	0.149* (1.331)	-0.020 (-0.265)	0.036* (1.553)	0.207* (3.197)	.491
One Month Return	-0.029 (0.35)	-0.098 (-0.68)	0.135* (1.501)	-0.015 (-0.197)	-0.037 (-0.561)	0.062 (0.942)	.393
Six Month Return	0.042 (0.43)	-0.124 (0.64)	0.030* (1.159)	0.203* (2.001)	-0.124* (-1.584)	-0.007 (-0.079)	.368
One Year Return	0.037 (0.44)	0.058 (0.396)	0.201* (1.461)	0.102** (1.334)	0.054 (0.805)	-0.032 (-0.479)	.389

t values are in parenthesis * 5% level of significance ** 10% level of significance

Table 9: Multiple Regression Equations of IPO Returns as the Dependent Variable (With Dummy Variables)

Dependant Variable	Independent Variables							R^2
	MC	OP	FC	AS	DR	AL	Dummy	
First Day Return	0.007 (0.23)	-0.314* (4.681)	0.204* (3.803)	-0.001 -0.043	0.006 (0.256)	0.012 (0.506)	0.008 (0.305)	.639
Second Day Return	0.042 (0.53)	0.005 (0.136)	0.066* (1.483)	-0.061 (0.826)	0.108* (1.650)	0.176* (2.716)	-0.053 -(0.771)	.553
Third Day Return	-0.002 (-0.02)	-0.112 (0.79)	0.143* (1.450)	0.019 (0.25)	0.038* (1.577)	0.207* (3.173)	0.013 (0.183	.494
One Month Return	-0.018 (0.22)	-0.029 (0.197)	0.062* (1.453)	-0.005 (-0.06)	-0.009 (-0.031)	0.056 (0.852)	0.149* (2.153)	.438
Six Month Return	0.042 (0.43)	0.124 (0.64)	0.030* (1.12)	0.203* (1.001)	-0.124* (-1.584)	-0.007 (-0.079)	0.179* (1.938)	.502
One Year Return	0.031 (0.37)	0.014 (0.090)	0.155* (1.198)	0.094* (1.235)	0.033* (1.483)	-0.027 (-0.406)	0.098** (1.385)	.445

t values are in parenthesis * 5% level of significance ** 10% level of significance.

WHITHER IPOS?

The IPO market is not dead as presumed during 2001-2003, one of the worst periods in the IPO history. According to Thomson Financial, just 111 companies went public for the first time in 2001, raising a total of $39 billion in equity capital as compared to 386 companies that went public in 2002, raising an aggregate $60 billion. In 2003, just 85 companies entered the IPO market and raised $15.77 billion. From 2001 to 2003, there were fewer than 100 IPOs a year on average. In contrast, there were 100 or more new stock offerings each *quarter* in the late 1990's. Two thousand four was a better year for the

IPO market as 385 companies raised $60.63 billion in equity capital. The total for 2004 was the highest since 2000, the year when the last downturn in the securities markets began.

Google.com has provided the impetus for the current IPO interest in the market when it raised $1.92 billion on August 19, 2004, and was the largest-ever U.S. auction-style IPO. But it was not the largest IPO in 2004; that distinction went to General Electric Co.'s spun-off entity Genworth Financial that raised $2.86 billion. Second was the insurer Assurant Inc. which raised $2.02 billion in February 2004. Although Google's annualized return was 126.8 percent for 2004, the highest return that year was obtained by Marchex Inc., which ended the year 223.1 percent above its offering price.

There were more gainers than losers in 2004. For the year, 63 percent of the deals were companies with reported profits. By contrast, just a quarter of the IPOs in 1999 and 2000 came from companies that had reported a profit, according to ipohome.com in Greenwich, CT. The average IPO had risen 23 percent from its offering price by 2004's end, according to the same company. Investors coming back to the IPO market and undertaking risks of failure, is a sure sign that the IPO market in the United States is coming back from the abyss and is finding new growth and financial opportunities.

Today's IPOs represent a more diverse cross-section of industries and involve companies that tend to be more mature with a history of profitability than the start-up companies that were prevalent during the IPO mania of the late '90s. They are not the masters of a "parallel universe" where the hyper valuation of the Internet stocks had created a weird, separate world as in 1999. They had come down to the earth with a huge thud, so to speak in 2000-2002. Today they reflect more realistic valuation of stocks, if not tending to undervaluation. There is also an orientation toward quality in the IPO market as opposed to the high speculative content that was there in 1998 or 1999.

During the first part of 2005, the financial services sector has been the top industry in terms of the number of IPO issues. This category has surpassed 2004's dominant sectors which were health care and biotechnology, according to ipohome.com. It seemed that the unprofitable early-stage drug development companies appeared to be less appealing to prospective investors, with several companies forced to cut their offering prices sharply before they could come to market in 2005. But the operating environment for financial services firms continued to be good, with strong earnings and good growth prospects. Also, large-scale "carve-outs" from established companies have taken place recently, something not seen for a long time. A "carve-out" is a partial stock-market sale of a business owned by an already listed company. A recent public offering of General Electric Co.'s insurance unit Genworth Financial Inc., or the truck fleet charge-card unit Wright Express Corp. from Cendant Corp. are recent carve out examples. They are generally easy to market to prospective investors because they have stable businesses and prominent brand recognition.

Mergers and acquisitions activities also have picked up in 2005. So far 33 percent of the withdrawn stock offerings were due to merger negotiations by the IPOs, according to Dealogic. That rate was up from 2004 when 18 percent of the withdrawn deals were because of acquisition discussions and was also higher than 2003 when 16 percent of the deals were pulled for that reason. However, the number of public-equity deals that have changed into acquisitions after filing paperwork with the Securities and Exchange Commission is only part of the scene. The trend is even stronger if the number of companies in the pre-filing stage that switched were counted. Deals are being made in the middle of the pre-IPO road shows for investors, or sometimes even before. In the case of many IPOs, the sponsors of the offering seem ready to accept an acquisition over a public offering.

Another trend we see recently is that increasingly, IPOs are coming from companies that have been owned by private-equity investors for a year or less, according to the IPOfinancial.com.. It used to take three to five years for a firm that went private to come back to the public markets after fixing the

problems that beset the company. But now the turnaround can be as little as four months, as was the case for PanAmSat. It went private in August 2004 and filed for a new IPO in December of that year. One thing that is noticeable is that the companies that went private had a large amount of debt, and the IPO proceeds are often being used to repay at least part of the debt. Also, the money raised in the public markets is sometimes paid in part to the private-equity firms as special dividends.

A further recent development in the IPO market is that, instead of venture capitalists' major support, many IPOs are backed today by large private-equity firms such as Blackstone Group or Kohlberg, Kravis, Roberts & Co. According to the deal tracking firm Dealogic, 14 of the 40 United States IPOs that came to the market during the first quarter of 2005, or 35 percent, were backed by large private-equity firms, compared with 34 percent during the first quarter of 2004, and 31 percent in the final quarter of 2004. In contrast, just 7 venture capitalist-backed IPOs had started trading in the first quarter of 2005, compared with 10 in the first quarter of 2004, according to data supplied by Venture One. It is worth noting that at the height of the IPO market in the first quarter of 2000, 70 deals were venture-backed. Many of the large companies coming to the IPO market are old-line cyclical industries such as chemical manufacturing and non-cyclical industries like rural telecom providers. In contrast, venture capitalists have traditionally specialized in financing nascent technology and biotechnology firms, companies that have not performed well in the current IPO market.

Also, IPO growth may come with a price. History suggests that periods of growth in share sales lead to poor performance in the broader stock market. Over the past several years, the broader market as measured by the S&P 500 stock index has fallen on average 1.05 percent in the three-month period, following a one-month increase in stock offerings, according to the recent research report by Credit Suisse Group's Credit Suisse First Boston. The inverse is also true. The market is generally up 4.64 percent in the three-month period following a one-month decline in total share offerings. The data thus suggests that there is a "liquidity effect"—when there is a glut of supply, it is difficult for the market to absorb.

Also, recently some high-profile IPOs have been silent about the exchange they plan to list their shares on. While that is typical for small-scale or self-underwritten offerings that stand a good chance of never becoming public, the recent group of companies has included some of the markets' most anticipated IPOs, including online search engine Google, Inc. and the investment research firm Morningstar, Inc. NASDAQ has always marketed itself as the premier destination for high-growth technology and biotechnology companies. The NYSE has sold itself on the prestige of listing on the "Big Board." Recently, the 10 largest first-day gains have all taken place on the NASDAQ, while 9 out of 10 largest IPOs ever have been listed on the NYSE. For some IPOs, there is little choice in where to list because they do not meet the Big Board's listing requirements. So the competition is more acute for companies that meet the NYSE listing standards. In the future, both stock markets also face increased competition for new IPO listings from outside markets. Alternative trading platform Archipelago Holdings Inc. has teamed up with the Pacific Stock Exchange, to create ArcaEx, an all-electronic stock market that will give stiff competition to both the NYSE and the NASDAQ for the listing of IPOs. Although the proposed merger between NYSE and Archipelago Holdings will remove that threat, other forms of all-electronic stock exchanges may emerge in the future.

Another recent development in the IPO scene is the "auction" process of selling stocks to the public, popularized by Google, Inc. In traditional IPO selling, the Wall Street underwriters set the number and price of the stocks to be sold. With an auction, on the other hand, the investors help set the price in a bidding process – the highest price that will fill all the orders is chosen. Besides Google, Alibris Inc., an online retailer of used or hard-to-find books, have used the auction approach to sell stock to the public for the first time. It is interesting to note that while Google is a highly profitable company, Alibris is not profitable at all. If a small company like Alibris can sell shares successfully through the auction process,

then surely it will be followed by many such companies whose profit potential lies far on the horizon. That had happened in the case of Morningstar, Inc., which in May 2005 followed the auction process successfully. However, auctions do seem to be gaining ground, and not just for the IPOs. In May of 2004, online retailer Overstock.com Inc. sold 1.5 million shares of its stock in a follow-on issue placed through an auction, led by W.R. Hambrecht & Co. It marked the first time a secondary or follow-on sale took place in an auction. But still auctions are a rare phenomenon on Wall Street today. In 2004, only three out of 251 U.S. IPOs, used the auction method.

Increased regulatory pressure on the investment banks is also a recent development. Regulatory action against some investment banking firms over some IPO practices and the conflicts of interest between investment bankers and research analysts employed by the same firms had revealed that IPOs were used by investment banks as an enticement for future investment banking businesses. Company executives were offered shares in "hot" IPOs in exchange for the promise of future banking contracts from those executives. Such a practice known as "spinning" has been banned.

Similarly, the "laddering" practice has come under scrutiny by the SEC. It was found that some securities firms had doled out shares to investors based partly on their commitments to buy additional shares after trading began. This was called "laddering" of stocks sold in initial public offerings. Steering "hot" IPOs to big investors who signaled plans to buy additional shares could have stimulated additional demand for technology stocks during the stock market "bubble" of the late 1990s. It contributed to the huge first-day price gains that eventually worsened losses suffered by small investors who, lacking access to the actual IPOs, bought on the open market after trading began. If this practice is discontinued, it would create a healthier atmosphere for investments in IPOs by small investors.

Although the Sarbanes-Oxley Act of 2002 created more governmental restrictions and the greater costs to go public, that did not deter companies which really needed external funding from going ahead. Sarbanes-Oxley was designed to tighten governance and audit standards at publicly-traded companies in the wake of corporate bankruptcies such as Enron, Worldcom and others. Among other things, it forced company executives to personally certify financial results and placed more responsibility on corporate boards. Nevertheless, IPO activity has increased since Sarbanes-Oxley went into effect. According to the Thomson Financial, in the second quarter of 2004, 58 companies sold stocks to the public for the first time in the United States markets, raising $10.2 billion. For the same quarter in 2003, just 5 companies came to the IPO market, raising $1.8 billion. The number of companies filing with the Securities and Exchange Commission to go public had also risen considerably in 2004 from the previous three years. As one investment banker put it bluntly, "they go public because they need the capital."

But still there is a considerable financial burden for firms to bear in going public. It is being acutely felt by smaller companies that just do not have the revenues to cover the additional expenses. For companies with revenue of less than $1 billion, the cost of being a public company – including insurance, accounting and board compensation – rose 35 percent to $2.86 billion in 2003 from $2.13 billion in 2002, according to a survey done by the law firm Folay & Lardner LLP in Chicago, Illinois. The biggest cost came in areas such as directors' and officers' liability insurance, the cost of which has more than doubled since the Sarbanes-Oxley Act was passed. Since then director compensation has nearly tripled. But for many companies, the added costs are worth bearing. For example, many bio-technology companies that came to the IPO market had little or no revenue, let alone profit. They have survived only by receiving financing from venture capitalists. For companies such as these, they go public because of their need for external capital. In the end, the decision to go public is not driven by the new costs, but rather with how high public investors are willing to value a company.

CONCLUDING REMARKS

Initial public offerings (IPOs) are the main vehicle for firms to raise capital from the public for firms that are not blessed with substantial venture capitalists' funds. It serves the useful function of capital formation and risk-taking whereby the intrepid entrepreneurs are rewarded handsomely, or are thrown into bankruptcy. At the same time, being a public company means the firm will be subject to public scrutiny and governmental regulations not encountered before. But so long as the securities markets are fair and transparent, more and more companies will go public and channel public savings into stock investments, thereby enriching the economy and creating employment, income and growth in the private sector.

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RELATIONSHIPS AMONG INTELLECTUAL CAPITAL,UNCERTAIN KNOWLEDGE, AND CULTURE

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ABSTRACT

This exploratory study examined the uncertainty of knowledge within an organization's environment and its impact on the retention and development of intellectual capital (IC). It further explored the extent that certain internal cultural features impact IC. Findings suggest that as knowledge uncertainty increases, IC opportunities are lost in greater numbers, there are more individual and organizational disconnections, and there is a greater suppression of IC. These outcomes suggest the need for a greater emphasis on IC where knowledge uncertainty is high. Cultural characteristics relating to organizational individualism, high power distance, and short-term orientation can be detrimental to the retention and creation of IC.

INTRODUCTION

The topics of intellectual capital (IC), knowledge management, and intellectual property continue to interest companies hoping to reap benefits from assets generally not recorded on the balance sheet. While suggesting that countries and industries with large numbers of knowledge workers must emphasize IC development, the IC literature generally remains silent in providing specific criteria to apply to determine if organizations would benefit from undergoing change to develop more rigorous IC processes. Further, this literature often fails to identify organizational characteristics that impede or promote the implementation of IC development initiatives, leaving managers unsure of the need to develop IC and the challenges they will face should IC development programs be undertaken in their organizations.

The current exploratory study sheds light on the issues mentioned above by identifying important characteristics pushing organizations towards IC development. It explores the possibility that the *rate of change of knowledge* for the organization (the degree of knowledge uncertainty) ought to dictate the degree of emphasis that an organization places on the development of its IC. Furthermore, it identifies various *cultural characteristics* conducive to IC development.

INTELLETUAL CAPITAL AND THE EXTERNAL ENVIRONMENT

An often cited definition of IC by Thomas Stewart (1997) suggests that IC creates wealth for the organization as follows: "intellectual material-knowledge, information, intellectual property, experience - that can be put to use to create wealth" (p.xx). A crucial issue for organizations is to determine the appropriate extent of IC developmental emphasis. We contend that this emphasis depends upon levels of knowledge uncertainty pervading the environment surrounding the company.

Brown & Moberg (1980, p. 53) discuss four features of uncertain environments applicable to levels of knowledge uncertainty. The features include 1) the number of specific variables 2) their differences from each other; 3) their interaction; and 4) their rate of change. Therefore, knowledge is more uncertain when an organization uses different types of knowledge that interact and change frequently. The less one is able to anticipate the future with certainty, the more one needs to rely upon corporate expertise as a means of coping with the uncertainties when this future arrives.

Certainty of knowledge is not an easy concept to grasp. To better understand it, consider the example of planning a trip to Costa Rica in comparison to planning a trip to the planet Mars. The planning process for these two trips requires two very different sets of activities. For the trip to Costa Rica, knowledge is relatively *certain*. The activities require making travel arrangements with the airline or travel agent. The need for organizational expertise is minimal and an airplane, flown by a highly trained and competent pilot and flight crew, ensures that one arrives there safely.

However, for the Mars trip knowledge is far more *uncertain.* The planning process requires transfers of knowledge from information obtained from unmanned probes and other scientific sources. While a spacecraft utilizes theoretically sound systems and processes, no one has traveled to Mars before and knowledge uncertainty remains high. The space crew needs backup plans to cope with numerous possible scenarios and the members must be able to rely upon one another, as do members of SWAT teams or peacekeeping missions operating in hostile environments. This suggests that where knowledge is uncertain, reliance upon organizational expertise, processes, and relationships becomes paramount.

Extending this line of thinking to the general business environment, we suggest that when organizational expertise is highly shared among employees of a business, operating in an uncertain knowledge environment, the organization will probably have a better chance for survival than for a counterpart where knowledge is horded. Further, organizations operating in knowledge certain environments probably do not have to place strong emphasis on IC development. For example, a construction company probably requires less IC emphasis than a biotech company because knowledge change and uncertainty is far less for the former company than the latter.

Figure 1 demonstrates the relationship between type of knowledge and emphasis on IC. For quadrants A and C (for example, the construction company), knowledge is relatively certain and organizations operating in this kind of environment need less emphasis on IC. For quadrant A, low IC emphasis constitutes the correct choice, whereas for quadrant C, high emphasis represents inefficient use of time and resources.

For quadrants B and D (for example, a biotech company), knowledge is uncertain. A high emphasis on IC development is appropriate as demonstrated in quadrant D, but the low emphasis shown in quadrant B, places an organization in serious jeopardy. Radical and rapid technological change constitutes the external environment in which this firm operates. IC probably possesses a very short shelf life and the environment makes it crucial for the firm to capture it to avoid reinventing the wheel when similar problems require resolution. Such organizations, operating under these conditions, need to emphasize the rapid development and dissemination of IC through systems that motivate knowledge sharing and lead to the creation of common knowledge among the employees. Therefore, in this study, levels of knowledge uncertainty of external environments of organizations were examined to determine if IC losses increased when uncertainty exists, possibly suggesting the need for greater IC emphasis in such firms.

ORGANIZATION CULTURE AND INTELLECTUAL CAPITAL

Probably Edgar Schein (1984, p.3) provides one of the most frequently recognized definitions of culture in the literature which, in part, suggests that it is “a pattern of basic assumptions” passed on to new members of an organization to deal with external adaptation and internal integration problems. Researchers recognize that culture supports or hinders achievement of organizational objectives (Schein, 1986) and the role of culture receives increasing attention with reference to the organization’s intangible assets as critical success factors.

Figure 1: The Relationship Concerning Uncertainty of Knowledge and Emphasis on IC

Emphasis on IC	Uncertainty of Knowledge: Low	Uncertainty of Knowledge: High
Low	A Status Quo	B High Risk
High	C Inefficient	D Status Quo

Source: Herremans, Irene M. and Isaac, Robert G. (2005), "Management planning and control: Supporting Knowledge Intensive Organizations." *The Learning Organization*, Vol 12 No 4, pp. 320.

Chiavenato (2001) describes today's working environment, in part, as moving from stability to change, from command to orientation, and from solitary to collective activity. Because ambiguity and uncertainty exists in the working environment, democratic and inspirational leadership with fewer hierarchical levels is more accommodating to this environment. Teamwork, participative decision making, and group synergy is replacing individual activity. New work structures demand dialogue, direct and open communication, and deep concern with organization climate and employee satisfaction (Chiavenato, 2001).

Keeping Schein's culture definition in mind, De Long and Fahey (2000) suggest that culture shapes assumptions about the essence of knowledge and that it mediates relationships between individual and organizational knowledge. Further, it creates the context for social interaction and shapes processes through which the organization realizes knowledge creation, legitimatization, and distribution. Culture dictates what knowledge belongs to the entire organization, subunits, or individuals.

Several studies provide evidence supporting the importance of organizational culture in either knowledge management or intellectual capital development programs. Chamish (2001) found an organization's success in establishing a knowledge management program was due to first establishing an appropriate cultural infrastructure. American Productivity & Quality Center (APQC) found that collaboration facilitated knowledge sharing (Carlin and Womack, 1999). Gold, Malhotra and Segars (2001) found that organizational capabilities, including a culture of encouraging employee interaction, are preconditions for effective knowledge management. McDermott and O'Dell (2001) linked the act of sharing knowledge to widely held core values.

Many authors recognize culture as one of the main obstacles in realizing the potential of intangible assets (Schein, 1996; von Krogh, 1998; O'Dell & Grayson, 1998, DeLong and Fahey, 2000). However, a lacuna exists in the literature describing characteristics for the "right" organizational culture that facilitate IC development programs.

To investigate what features create cultures conducive for IC development, three of the five dimensions of culture that Hofstede (1980, 1991) originally identified in the measurement of national cultures are utilized in the current study. Because Hofstede's work is recognized in the international business literature, it is reasoned that if nations possess these cultural dimensions, organizations probably possess them as well and they likely influence organizational ability to develop IC programs. Below, the three pertinent Hofstede dimensions of culture are briefly described in relation to the development of IC within an organization.

First, societies differ on the individualism-collectivism dimension, and probably the same thing applies to organizations. Should organizations emphasize the benefits of independent, rather than collective efforts, they may experience problems of knowledge hording rather than knowledge sharing, making it difficult to develop IC (O'Dell & Grayson 1998). Should individual, rather than collective rights, achievements, recognition, and rewards assume importance to a particular culture, employees may find it more difficult to develop shared expertise and work in teams (Nonaka & Konno, 1998; O'Dell & Grayson, 1998). Group synergy does not develop from solitary activity, but rather collective and collaborative behavior (Carlin & Womack, 1999; Chiavenato, 2001). Therefore, we suggest that organizations with cultures of individualism will probably find it harder to implement IC development programs.

Second, societies differ considerably in how people relate to one another, based on power and authority structures, in terms of expecting deference from members of society occupying lower social positions towards those occupying higher social positions. Similarly, strong power distance within an organizational culture probably dictates the observance of proper channels of communications through formal means of address. Status differences impede cross-functional knowledge sharing (DeLong and Fahey, 2000). If IC relies upon the transformation of individual knowledge into common knowledge, then formal relationships between parties hampers knowledge sharing processes (Szulanski, 1996). Conversely, informal relationships support IC development as knowledge becomes easier and faster to share.

IC development flourishes in an environment where few hierarchical levels exist (Chiavenato, 2001), and where there is an ongoing process of identifying and sharing IC practices among employees of the organization (Tan, 2000). Conditions exist that promote employee perceptions of approachability regarding discussions about sensitive topics, facilitating collaboration, interactivity, and the reuse of existing knowledge, when a culture emphasizes horizontal (rather than vertical) interactions (DeLong and Fahey, 2000). Therefore, we suggest that high power distance within an organization's culture tends to inhibit the sharing of knowledge, whereas lower power distance levels ought to improve organizational effectiveness regarding IC development.

Third, some societal cultures take long term viewpoints in their approaches towards thinking and planning, whereas other cultures possess short term perspectives. Similarly, organizational cultures possess long or short term orientations. We suggest that organizations with short term orientations fail to capture IC because they are worrying about handling today's problems rather than preventing future problems. Attempts to capture and share knowledge arising from past situations for future use are probably rare due to imminent pressures faced by employees and they are perceived as too expensive. Conversely, organizations with long term perspectives are interested in developing employees to be able to adapt their skills to changing environments. Therefore, these organizations are willing to invest in knowledge sharing processes and procedures that may not provide an immediate return. Workforce knowledge development comes with experience and education that evolves over the long term and a long term cultural orientation ought to facilitate IC development.

METHODOLOGY AND PROPOSITIONS

In light of the above discussion, this exploratory study sets out to find answers to two research questions: Given varying degrees of knowledge uncertainty in external environments, is knowledge uncertainty associated with greater emphasis on IC?

What organizational culture characteristics support or hamper IC realization within organizations?

To answer both questions, two exploratory exercises took place constituting phase one and two of this study, representing qualitative and quantitative approaches respectively.

Regarding phase one, as part of a university course, low level to middle level managers viewed a video of a very successful international consulting firm that has few tangible assets and an acute awareness of the necessity of realizing its IC to its fullest. After watching the video, subjects provided information through an open-ended questionnaire as to why this firm enjoys success and whether their own organizations needed more emphasis on IC. They also identified cultural barriers to change. Results were content analyzed to derive variables employed in phase two and establish face validity. From the findings of phase one, a new Likert scale questionnaire was prepared for use in phase two and the questions were designed to test four propositions as follows:

Proposition One:

> The greater the level of uncertainty of knowledge of the organization's environment, the greater the organization needs to emphasize IC.

Proposition Two:

> The greater the organizational individualism, the less conducive the organization's environment will be to the retention and development of IC.

Proposition Three:

> The higher the power distance, the less conducive the organization's environment will be to the retention and development of IC.

Proposition Four:

> The greater the short-term orientation, the less conducive the organization's environment will be to retention and development of IC.

For phase two, an MBA class was used as an avenue to access entrepreneurial organizations, some of which experience rapid change in knowledge. In the program, the students worked in teams with specific organizations as part of a consultative learning experience. Part of the students' experience required an investigation of the organization's learning systems. Therefore, the student teams distributed the Likert scale questionnaire (developed from phase one) among employees of their respective organizations, attempting to select a representative variety of levels and functions. The researchers and the students analyzed the information provided in the questionnaires.

PHASE ONE RESULTS

Content analysis of the manager's open-ended questions confirmed inferences drawn from the literatures discussed earlier, leading us to develop the four propositions presented. Examples of statements made by these managers (presented in Table 1 for each of the propositions) suggest that levels of environmental knowledge certainty and three internal cultural variables are important. The three cultural variables include individualism/collectivism, power distance, and short-term/long-term orientation (Hofstede, 1980, 1991) in relation to the extent that they facilitate or inhibit the development of IC. Two of Hofstede's original cultural dimensions were not included in phase two as there was little evidence that masculinity/femininity or uncertainty avoidance would affect IC development.

Table 1: Managers' Observations Related to Four Propositions

Proposition Number	Related Managerial Observations
One	1. [We must have] the ability to make decisions quickly in order to capture opportunities.
	2. [We often find ourselves] completing projects within short cycle times.
	3. [It is essential that we have the] ability to develop or drop processes quickly. 4. [We have implemented] rigorous and formal controls that allow the organization the flexibility to abandon any processes that are not achieving the company's goals. 5. We have several patents that are expiring; therefore, competitors will be able to produce substitute products very quickly.
	6. In a fast-paced environment, communication among groups is sometimes sacrificed; because this environment does not lend itself to documentation.
Two	1. [It is important] to have a teamwork-oriented culture: trust and synergy among partners with a complementary set of expertise and skills.
	2. [There is an] interdependence of the partners; [they do] not operate in silos.
	3. In a large company it would be almost impossible (but also ideal) to have all employees with the same set of values and attitudes toward work and ethics.
	4. Employees in larger organizations often hoard information or in some cases attempt to make others look bad in order to promote themselves.
	5. [Some] feel threatened by giving all of their knowledge.
	6. Due to the size and structure of our company, work activities are sometimes duplicated by different departments because there is a lack communication or understanding as to how other departments fit into the organization and what they do.
	7. Turf battles and protectionism thwarts many attempts to build networks, trust, and credibility.
Three	1. The organizational structure is based on a self-regulated participation group without any supervisory structure. The control system is essentially the internal motivation of the participants.
	2. [Members of the organization] work independently without an authority structure.
	3. The flat structure insists that employees take responsibility for their actions, but some are not confident enough in their own knowledge to feel comfortable working in this type of environment.
Four	1. My organization has a yearly turnover of approximately 15 percent with little knowledge sharing and capture; therefore, a fair amount of time is used in re-creating materials that already existed.
	2. We have no apprenticeship or mentoring program that helps transfer knowledge from our highly talented long-term employees to our younger employees.
	3. We rely very heavily on consultants for short and medium-term projects, generally two to eight months. Significant knowledge and information is lost as soon as the consultants leave.
	4. We do not have any method in our organization to capture ideas in order to communicate them to another time or another situation. This is particularly troublesome because, with offices throughout North America, one group often reinvents a solution to a problem that another group in another office has already addressed.
	5. [It is important to have] an inherent understanding among the employees of the need to understand why we're doing what we are doing rather than simply how we do what we do

For uncertainty of knowledge (proposition one), the less employees are able to anticipate their futures, the more they need to rely upon corporate expertise as a means of coping with the uncertainties. To compete in a fast-paced knowledge environment, organizations must place more emphasis on IC. The six managers' observations shown in Table 1 lend support for this conclusion.

Relating to individualism/collectivism (proposition two), the first three observations from the managers' questionnaires provide evidence for the necessity of having a culture exhibit some collectivism characteristics to support IC development. The remaining four observations demonstrate that a culture with strong individualism characteristics could hinder the development of an IC program dedicated towards the sharing of knowledge.

Regarding power distance (proposition three) the three managers' observations imply that low power distance is more conducive to a creative, sharing environment, necessary for the development and

realization of the organization's IC. The observations suggest that these organizations choose to decentralize decision-making rights and shift from formal to informal communications promoting IC development.

Finally, concerning short/long term orientations (proposition four), the first four observations suggest that an organization culture that promotes short-term thinking makes it more difficult to develop and realize IC. By contrast, as demonstrated by the fifth observation, an organization with a long-term focus would be interested in developing its employees to be able to adapt their skills to a changing environment.

PHASE TWO RESULTS

Subjects and Organizations

The questionnaire was administered to 71 respondents in 11 firms that were participating in an MBA company program. Multiple levels and functional areas within each company were surveyed. All companies were owner-managed, ranging in size from 17-130 employees. Due to the mission of this MBA program, all companies were entrepreneurial in nature, most non-public, and generally successful. Some were involved in international activity. The data collected represented broad industry sectors and a mix of service and product businesses.

Questionnaire and Factor Analyses

Subjects rated all items on the questionnaire by choosing numbers that ranged from one (disagree) to five (agree) on a Likert-type scale. The questionnaire contained 30 statements. For the 14 statements pertaining to IC emphasis, principal component analysis indicated a three-factor solution (minimum eigenvalue of 1.0), explaining 59.79 percent of the variance. Factor 1 represents the relationship between the individual and the organization and considers knowledge linkages and networks that help to connect the individual with the organization, making knowledge transfer easier. This factor is referred to as the *IC individual/organization connections* (F = 5.562, alpha = .76, representing seven questions). Factor 2 represents opportunities lost by the organization due to a lack of properly identifying, managing, and measuring IC. This factor is named *IC opportunities lost* (F = 1.779, alpha = .84, representing five questions). Factor 3 represents organizational characteristics such as routinization and turnover that retard IC development or leads to its loss. This factor is called *IC suppression* (F = 1.029, alpha = .61, representing two questions).

While the IC suppression factor did not possess the traditional .70 reliability level generally considered acceptable for research purposes, Nunally (1978) suggests that alphas of .50 or higher are satisfactory when engaging in exploratory research that tests theory in the early stages of development (Sommer, Bae, and Luthans, 1996).

Examples of statements relating to the *IC individual/organization connections* factor (factor one) included statements such as "strategic information impacting the realization of corporate objectives is not readily available" and "features of our information systems fail to capture organizational knowledge." For the second factor, *IC opportunities lost*, statements included "intellectual capital (IC) assets are not recognized or safeguarded from risk" and "the loss of IC is not appreciated until someone leaves." Finally, the two statements forming the third factor, *IC suppression*, included "most employees continue to use the same methods without asking, is there a better way to do this?" and "higher turnover causes the loss of IC."

Questions representing uncertainty of knowledge were factor analyzed. The analysis provided two factors explaining 51.68 percent of the variance. Factor 1 represents the degree and speed of knowledge

uncertainty occurring within the organization. This factor is labeled *speed and degree of knowledge uncertainty* (F = 2.464, alpha = .67, for five questions). Factor 2 represents the employees or organization's ability to adapt to knowledge uncertainty and is labeled *ability to adapt to knowledge uncertainty* (F = 1.154, alpha = .42, for two questions). Since the reliability for this second factor failed to meet the minimum alpha criterion of .50, this scale was excluded from all further analysis. Due to this exclusion, the remaining five statements associated with the first factor were simply referred to under the original name for the statements for this issue, namely the *uncertainty of knowledge scale*.

Finally, questions from each of the culture dimension scales were factor analyzed and tested for reliability. In all cases, single factor solutions were noted as follows:

- Power Distance (F = 1.712, alpha = .61, for three questions)
- Collectivism (F = 1.661, alpha = .60, for three questions)
- Long term (F = 1.963, alpha = .73, for three questions)

It is necessary to note that the identification of a three-factor solution for IC emphasis necessitates an examination of 12 propositions, rather than the four propositions originally proposed earlier. Each of these four propositions require testing in relation to *IC individual/organization connections*, *IC opportunities lost*, and finally, *IC suppression*, all of which are factors that reflect various aspects of organizational emphasis on IC.

Testing of Propositions

Pearson correlations tested the degree of association between the three IC emphasis factors (*IC individual/organization connections*, *IC opportunities lost*, and *IC suppression*) and the four proposition variables (uncertainty of knowledge, individualism, power distance and short-term). The results are shown in Table 2.

All the propositions associated with uncertainty of knowledge were supported (proposition one set, $p < .01$), in relation to the three factors concerning IC emphasis. Thus, in all cases, it appears that the greater the perceived level of environmental uncertainty of knowledge, the greater the number of problems associated with IC retention and development. Thus, assuming causation, the obvious conclusion suggests that organizations operating in environments where knowledge is highly uncertain need to emphasize IC development and retention.

Two of the individualism propositions (proposition two set) were not supported in relation to factors one and three of the IC emphasis variable. Only the individualism proposition relating to IC opportunities lost was supported ($p < .01$). Support for this proposition suggests that a positive relationship exists between individualism and the number of IC opportunities lost (as individualism increases, so do the number of opportunities lost).

It is interesting to note that the IC individual/organization connections and IC suppression propositions were not supported regarding the individualism culture. However, this is not really surprising. In the first instance, statements relating to the availability of strategic information and organizational information systems failing to capture knowledge do not directly relate to any form of individualist employee activity. In the second instance, turnover and task routines similarly have little to do with cultural individualism, assuming causation.

Table 2: Correlation of Variables with Three IC Factors

Propositions	IC Individual/ Organizational Disconnections	IC Opportunities Lost	IC Suppression (Retards IC Development)
1. The greater uncertainty of knowledge....	....the greater the individual /organizational disconnections (.549, p < .01)	....the more IC opportunities are lost (.436, p < .01)	....the greater the IC suppression (impact of turnover and routinization) (.363, p < .01)
2. Greater organization individualism	....no impact on individual/ organizational disconnections (.133, n.s.)	....the more IC opportunities are lost (.313, p < .01)	....no impact on IC suppression (.031, n.s.)
3. Higher power distance	....the greater the individual /organizational disconnections (.557, p < .01)	....the more IC opportunities are lost (.330, p < .01)	....the greater the IC suppression (impact of turnover and routinization) (.316, p < .01)
4. Greater the short-term orientation	....the greater the individual /organizational disconnections (.492, p < .01)	....the more IC opportunities are lost (.402, p < .01)	....the greater the IC suppression (impact of turnover and routinization). (.362, p < .01)

Pearson correlations, two-tailed tests, N = 71; n.s. = not significant

To explain the lack of findings another way, individualism on an aggregate basis may be measured in an organization, but it still remains fundamentally a personal characteristic of each employee. The other factors relating to power distance (high vs. low) and time length orientation (short vs. long-term) of the organization culture are imposed upon the employee. Thus for individualism, the level of turnover and the routinization of jobs really does not relate to the level of personal individualism displayed throughout the organization (IC Suppression), nor does the availability of strategic information or organizational information system's abilities to capture knowledge (IC Individual/Organizational Disconnections). However, it does relate to IC Opportunities Lost regarding issues such as dependency on a few key individuals (due to a lack of sharing) and a failure to measure IC in the first place.

High power distance and all three IC emphasis factors (proposition three set, $p < .01$) were positively associated suggesting that high power distance makes it difficult for organizations to retain and develop IC, whereas low power distance is conducive to the realization of organizational IC. The same conclusion is made regarding the positive relationship between short-term orientation and the three IC emphasis factors (proposition four set, $p < .01$), assuming causation in each case.

DISCUSSION

Findings of this exploratory study indicate that uncertainty of knowledge constitutes a crucial variable in relation to an organization's emphasis on IC. This appears logical when an organization finds itself in situations that are extremely difficult to predict and where the certainty of the knowledge is minimal. It must rely upon corporate 'know how' to secure its ongoing survival, just as the members of a police swat team learn to rely upon one another as they walk into an unknown and potentially hostile situation.

Emphasis on IC also ensures that the organization works smart rather than simply works hard to remain competitive.

Support for the findings that the three culture variables of long-term orientation, low power distance and collectivism come as no surprise in terms of the role they play in assisting to create an organizational environment that is conducive to the development and realization of IC. Long-term orientation ought to facilitate IC emphasis because the organization is collecting knowledge tools that will enable ease of travel along the pathway to its future. Conversely, a short-term emphasis suggests a vicious circle of encountering problems and rapidly solving such problems to continue to survive - a treading water approach to managing IC - without attention to capturing this IC for use in future situations.

Low power distance primarily facilitates communications vertically, but when formality of communication is not required in an upwards direction, communication flow is enhanced horizontally as well. Thus, knowledge spreads rapidly throughout the organization. Collectivism implies knowledge sharing through teamwork to secure an acceptable continuously emerging future, whereas individualism suggests knowledge hording. In a technologically complex world, emphasis on individualism needs to give way to collectivism simply because the individual no longer knows enough to go it alone. Thus, organizational cultures that possess collectivist characteristics should find the internal environment more conducive to the development and realization of IC.

In summary, managers need to assess and monitor levels of knowledge certainty/uncertainty in the external environment and adjust their emphasis on the development of IC accordingly. Further, they need to monitor their organization's cultures to ensure that conditions exist that permit them to emphasize IC development when it is required. Limitations of the study include its exploratory, rather than explanatory, nature. Furthermore, subjects used in the study were drawn from 11 different organizations but not in equal numbers from each organization. Therefore, employees who participated in larger numbers from some of the organizations could bias findings of this study, due to their disproportional representation.

Future research dictates the examination of uncertainty of knowledge, in terms of the organization's internal and external environments. Research needs to examine the role that organizational climate plays in making an organization's internal conditions amenable to an increased emphasis on IC development. Climate involves issues such as trust, openness, ownership of ideas and risk-taking (Golembiewski, 1979) and it could play a major role in hampering or facilitating IC development. Other relevant issues deserving consideration in the development of organizational IC include groupthink, territorialism, and organizational citizenship. Research efforts are currently underway to examine all of the above issues.

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INTERNATIONAL ECONOMIC GROWTH AND ENVIRONMENTAL POLLUTION

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ABSTRACT

This paper estimates the relationship between the level of economic growth and the extent of environmental pollution for a wide range of both industrialized and emerging countries. Using data from 28 countries over the period 1975-1998, the paper finds support for an inverted U- shaped economic growth-pollution relationship. Using the aggregate level of CO2 as the measure of pollution and real GDP per capita as the measure of economic growth, the following countries appear to be operating on the rising portion of the inverted U relationship: India, China, Nigeria, and Thailand. On the other hand, the following eight countries appear to lie on the declining portion of the inverted U- relationship: Brazil, South Korea, Spain, United Kingdom, Canada, France, United States, and Japan. Furthermore, ten of the remaining fourteen countries, with per capita GDP below $4,000 exhibited a positive regression coefficient, although none were statistically significant. The turning point appears to occur at a level of GDP per capita, perhaps as low as $3,000-4,000. The paper explores the energy prospects and environmental polices of three of the worlds largest and fastest growing economies, China, India, and Brazil. These three countries are found to play a key role in the empirical findings of this study. The study demonstrates that growth in knowledge and improvements in environmental technology can compensate for an inevitable increase in the use of natural resources in production.

INTRODUCTION

Protective environmental policies are often seen as a constraint on economic growth. For less developed countries a clean environment is often viewed as a "luxury" that only advanced countries can afford. Alternatively, developing countries are encouraging not to repeat the costly environmental mistakes of the industrialized world. Widespread adoption of modern environmental technologies can lead to enhanced competitiveness in world markets and serve as a means of avoiding many of the social and cleanup costs incurred throughout the developed world. This paper makes a unique contribution to the literature by estimating the relationship between the level of economic growth, social commitment, and the extent of environmental pollution at the individual country level for both developed and emerging economies.

LITERATURE REVIEW

In a recent paper, Reichert (2004) empirically estimates the relationship between the level of economic growth, degree of social commitment, and the extent of environmental pollution across a wide range of both industrialized and newly developing countries. Employing aggregate data from 28 countries over the period 1975-1998, he finds empirical support for an inverted-U shaped economic growth-pollution relationship. Using real GDP per capita as the measure of economic growth and the aggregate level of CO2 as one measure of pollution, the model generates a negative turning point of approximately $14,100 measured in 1995 dollars. Certain public policy variables are also examined in the study. The empirical result suggests that the signing of the treaty on climate change passed in 1992 was perhaps a turning point in the effort to lower CO2 levels. The current paper extends this previous research and makes a unique contribution to the literature by estimating the relationship for each of the 28 individual countries. The disaggregate analysis identifies important country-specific differences in the economic growth/pollution relationship and leads to an informative discussion of the current environmental practices among three large developing countries: China, India, and Brazil. The analysis leads to important policy

recommendations for environmental planners. A summary of the earlier literature in this area is provided below.

Gradus and Smulers (1993) develop several models to investigate whether a policy shift towards a cleaner environment necessarily affects an economy's long-run rate of growth. Their findings are sensitive to the assumptions regarding production technology and the relation between pollution, production, and abatement. Using a neoclassical production function that allows for substitution between polluting factors of production (e.g., physical capital) and non-polluting factors (e.g., skilled labor) a shift in favor of a clean environment results in a production process that uses polluting factors less intensively and yet maintains its initial rate of growth. In their endogenous growth model, long-run growth remains unchanged if the productivity of the growth generating factor, assumed to be skilled labor, is unaffected by any change in pollution.

Grossman and Krueger (1995) examine the relationship between both air and water pollution and GDP over the 1979-1990 period. The dependent variables in the reduced form equations are various measures of pollution which are regressed against both linear and non-linear measures of per capita GDP. In addition, a proxy measure for "permanent income" was included along with a vector of covariates which indicate the location of the pollution monitoring stations, population density, and type of pollution measuring device. Their results find no consistent evidence that economic growth has an adverse impact on the environment. While there is some evidence that pollution and income increase together for the poorest countries, the results indicate that air and water quality tend to improve as income increases above some threshold (approximately $8,000 in constant 1985 dollars). These results suggest that as income increases, the public demands positive action for a cleaner environment through both public and private abatement programs. (See Figure 1 for a depiction of the inverted U-shaped relationship estimated in this paper).

Selden and Song (1994), using the same data on air pollution employed by Grossman and Krueger, also find an inverted-U relationship with per capita GDP as the dependent variable. The authors hypothesize that as economic growth proceeds at some point there is reduction of pollution due to: 1) a positive income elasticity for environmental quality, 2) changes in the composition of consumption and production toward less-polluting activities, 3) increased levels of education and environmental concern, and 4) a more open and responsive political system. They estimate a cross-sectional model by regressing per capita emissions against real per capita GDP, along with population density. Population density is included to capture differences in regional environment concerns with rural areas hypothesized to be less concerned about pollution than more heavily populated regions. Selden and Song estimate a negative per capital GDP turning-point which consistently exceeds $8,000.

Cole (2000) also addresses the issue of an inverted U-shaped relationship between per capital income and pollution. Data on emissions of sulfur dioxide and nitrogen oxides were collected from 1971-1991 for twenty less developed and advanced economies. To determine if the composition of manufacturing has become "cleaner", the degree of pollution intensity of manufacturing and the share of manufacturing output in GDP modeled. To identify the impact of factor costs on the level of pollution, the ratio of "dirty" to "clean" manufacturing output is regressed against population density as a proxy for the price of land, the average manufacturing wage, the real rate of interest, and the price of industrial electricity. The hypothesis being that dirty manufacturing tends to be more land, capital, and energy intensive than clean manufacturing which is more labor intensive. Cole finds that the reduction in pollution is due to: 1) a shift towards a cleaner composition of manufacturing and a declining proportion of manufacturing in total GDP, 2) reduced income elasticity of demand for "dirty" products, and 3) factors prices for land, labor, and capital determine the extent of "dirty" industry within a country's manufacturing sector.

Hofkes (2001) explores the issue whether economic growth and environmental quality are two opposing

or complementary goals. He analyzes both short term and the long term effects using a two-sector growth model in which both economic and environmental relationships and their interactions are considered. In his model, the environment is viewed as a consumption good which has a direct impact on social welfare. His model employs a production function producing final goods and a "knowledge sector" which produces knowledge regarding pollution-reducing technologies. Furthermore, according to his model, physical production can be consumed, used for abatement, or invested. While pollution is viewed as an inevitable by-product of the production process, cleaner technologies are developed within the model's knowledge-sector, reducing the amount of pollution for a given level of physical production. In addition, the public sector can decide to invest in pollution abatement at the expense of either consumption or capital accumulation. Hofkes finds that under certain conditions there exists a sustainable growth path along which the economy grows at a constant rate, keeping environmental quality at a stable level. Thus, growth in knowledge and improvements in environmental technology compensate for the growing use of natural resources in production, leaving environmental quality constant along the optimal growth path.

DATA SAMPLE

The World Bank's Development Indicators provides data on 225 countries. Thirty-nine countries with populations in excess of 25 million during 2002 were initially selected. Nine countries with a significant degree of missing data were excluded from the sample, leaving the following 28 countries in the sample. These 28 countries collectively represent 4.2 billion people, or 70% of the world's population in 2000.

Algeria	Congo, Dem. Rep.	Kenya	Philippines
Argentina	Egypt	South Korea	South Africa
Bangladesh	France	Mexico	Spain
Brazil	India	Morocco	Sudan
Canada	Indonesia	Nigeria	Thailand
China	Italy	Pakistan	United Kingdom
Columbia	Japan	Peru	Unites States

National environmental strategies and participation in international treaties on environmental issues provide evidence of a country's commitment to sound environmental management. Many countries prepare detailed national environmental and conservation strategies and environmental action plans along with environmental profiles and biological diversity strategies. Environmental profiles indicate how economic activity can stay within the constraints imposed by the need to conserve natural resources and often consider issues of equity, justice, and fairness. Biodiversity profiles provide information on species diversity, protected areas, major ecosystems, and habitat types.

Furthermore, as described in the 2002 World Bank's Development Indicators publication, many nations have also signed formal international treaties and agreements following the 1972 United Nations Conference on Human Environment in Stockholm and the 1992 United Nations Conference on Environment and Development in Rio de Janeiro. The Framework Convention on Climate Change is intended to prevent concentrations of greenhouse gases from damaging the biosphere. The Vienna Convention for the Protection of the Ozone Layer promotes research on the effects of changes in the ozone layer and promotes measures to counteract adverse environmental impacts. The Montreal Protocol for CFC Control required that countries reduce excessive ultraviolet radiation by cutting chlorofluorocarbon consumption by 50 percent by 1999. The 1994 United Nations Convention on the Law of the Sea established international rules and national legislation to prevent and control marine pollution. The Convention on Biological Diversity promotes conservation of biodiversity through scientific cooperation, access to genetic resources, and the sharing of ecologically friendly technologies. The following list of eight policy variables and national treaty commitments were included in the model developed in the next section.

1. ACTPLAN refers to environmental strategies and action plans that help integrate environmental concerns with the development process.

2. PROFILE refers to environmental profiles which identify how economic growth can proceed consistent with natural resource conservation needs.

3. BIOASS refers to assessments, strategies, and action plans included biodiversity profiles.

4. CLIMATE refers to the Framework Convention on Climate Change, New York, 1992.

5. OZONE refers to the Convention for the Protection of the Ozone Layer, Vienna, 1985.

6. CFC refers to the Protocol for CFC Control, Montreal, 1987.

7. SEALAW refers to the United Nations Convention on the Law of the Sea, Jamaica, 1982.

8. BIODIV refers to the Convention on Biological Diversity, Rio de Janeiro, 1992.

HYPOTHESES AND MODEL DESIGN

The model seeks to test the following two working hypotheses at the individual country level:
1) during the beginning phase of economic development, increased economic growth and increased pollution are likely to be positively related, 2) at some later stage the use of more environmental-friendly production technologies and greater environmental awareness on the part of policy makers may combine such that an inverse relationship may ultimately develop, and 3) at some point between these two phases a country may achieved pollution-neutral economic growth. Thus, the paper attempts to locate the position of individual countries on an inverted-U pollution-growth relationship. Thus, a country-specific model is estimated which relates the total production of CO2 to gross domestic product per capita (GDPCAP). Control variables in the model are included to account for structural and social differences between countries, such as the extent of urbanization, and differences in the energy intensive-nature of the productive sector, as measured by the level of both total commercial energy use and electrical energy production. Finally, the effect of changes in national priorities and the level of environmental commitment are measured by two variables which indicate the year following the date of signing of the treaties relating to climate change and the ozone layer. (These policy dummy variables are placed one-year into the future to allow for subsequent changes in production procedures and processes as a result of these treaty commitments).

Models were estimated with both balanced and unbalanced data panel designs. In a balanced panel (reported in this paper), observations are included only when data on all variables are available for all cross-sections (countries) for all years. While the World Bank data set contains data from 1960-1999, case-wise deletion required by the balanced research design, reduces the effective data period from 1972 to 1998, a total of 27 years. To adjust for auto-correlation in the error term an auto-regressive term is included as a dependent variable in the model. This provides a total of 728 data points to estimate the model.

Since the primary focus of the model is the relationships between the levels of pollution (CO2) and the level of GDP per capita, a flexible model is employed which simultaneously estimates this relationship for each of the 28 countries in the sample. The following fixed-effects country-specific model was estimated using data for the 28 countries mentioned above over the period 1975-1998. In addition to the

linear model, a number of alternative functional forms were considered. The linear specification provided the greatest level of statistical significance as measure by the model's F-statistic. (The author will supply the other results upon request) The estimated fixed-effects country-specific equation is as follows:

$$CO2TOTAL_{t,j} = B_{1...28} + B_{29...56}(GDPCAP_{t,j}) + B_{57}(URBPOP_{t,j}) + B_{58}(TOTCOMENG_{t,j}) +$$

$$+ B_{59}(TOTELEC_{t,j}) + B_{60}(CLIMATE_{t-1,j}) + B_{61}(OZONE_{t-1,j}) + B_{62}(AR_{t-1}) +$$

$$B_{63}(AR_{t-2}) + B_{64}(AR_{t-3}) + e_{tj} \quad (1)$$

Where,

t = the year of the observation (t = 1975…1998)
j = the country of interest (j = 1…28)
$B_{1...28}$ = the fixed-effects constant-term regression coefficients for each of the 28 counties.
$B_{29...56}$ = the country-specific regression coefficients for each GDPCAP variable.
$B_{57...61}$ = the regression coefficients for each of the control variables in the model.
$B_{62...64}$ = the regression coefficients for each of the autoregressive error terms.
e_{tj} = a normally distributed error term.

The following economic and environmental variables were obtained from the 2002 World Bank Indicators Database.

CO2TOTAL measures total carbon dioxide emissions generated by the use of fossil fuels.

GDPCAP equals gross domestic product divided by total population in constant 1995 U.S. dollars. The country's total population includes all residents regardless of legal status or citizenship.

URBPOP is the percentage of the total population living in urban areas as defined by each country.

TOTCOMENG measures total commercial energy use and equals domestic production plus imports and stock changes, less exports.

TOTELEC measures the total electric power consumption from the production of various types of power plants less distribution losses, and own-use by heat and power plants.

The year in which the previously defined environmental commitments were either submitted or signed was initially included in the basic model: ACTPLAN, PROFILE, BIOASS, CLIMATE, OZONE, CFC, BIODIV, and LAWSEA. (Note: While the eight different treaties and environment policy measures were individually tested, Reichert (2004) found that the CLIMATE and OZONE treaties were the only two measures of environmental commitment that were statistically significant. Hence, only these two commitment variables are included in the current country-specific analysis. (Table 2, indicates the year in which each of these two treaties went into effect for each country in the sample).

EMPIRICAL RESULTS

Table 1 presents the main regression results of the paper. To conserve space the country-specific intercepts are omitted. In terms of the control variables, the level of total energy use in the country (TOTCOMENG) is directly related to the level of pollution and highly significant. On the other hand, the size of the urban population (URBPOP) carried a positive but insignificant regression coefficient. The coefficient on level of total electric power consumption (TOTELEC) was negative but also insignificant.

Turning to the primary explanatory variables, the date of signing the Climate Change treaty (advanced one year) is statistically significant and carries a negative coefficient, indicating a significant reduction in the level of pollution one year following the signing of the treaty.

Table 1- Fixed Effects Model: Country-Specific GDP Regression Results

Independent Variables	Regression Coefficient	Standard Error	T-Value	Prob.
URBPOP	0.001704	0.002426	0.702307	0.4828
TOTCOMENG	0.002824	0.0000785	35.99419	0.0000***
TOTELEC	0.0000289	0.0000541	-0.535352	0.5926
CLIMATE(-1)	-8139084	3068807	-2.652198	0.0082***
OZONE(-1)	-4729829	3074554	-1.538379	0.1245
GDPCAP Bangladesh (BGD)	4453.152	168347.8	0.026452	0.9789
GDPCAP Brazil (BRA)	-40179.84	21690.17	-1.852445	0.0644*
GDPCAP China (CHN)	509914.3	96235.81	5.298592	0.0000***
GDPCAP Congo D. Rep. (COG)	35966.68	100611.8	0.35748	0.7209
GDPCAP Egypt (EGY)	-8076.133	45172.25	-0.178785	0.8582
GDPCAP France (FRA)	-38596.91	2856.856	-13.51028	0.0000***
GDPCAP India (IND)	298817.7	161053.8	1.85539	0.0640*
GDPCAP Indonesia (IDN)	-51840.93	33383.92	-1.552871	0.121
GDPCAP Italy (ITA)	-1517.59	3130.586	-0.484762	0.628
GDPCAP Japan (JPN)	-12000.27	1628.692	-7.368039	0.0000***
GDPCAP Mexico (MEX)	268.7452	24459.93	0.010987	0.9912
GDPCAP Nigeria (NGA)	347868	184418.9	1.886293	0.0597*
GDPCAP Pakistan (PAK)	-96748	91671.1	-1.055382	0.2917
GDPCAP Philippines (PHI)	32925.91	83299.45	0.395272	0.6928
GDPCAP Thailand (THA)	24113.82	10273.03	2.347295	0.0192**
GDPCAP Great Britain (GBR)	-14986.02	3025.79	-4.952762	0.0000***
GDPCAP United States (USA)	-16381.41	7171.16	-2.284346	0.0227**
GDPCAP Algeria (DZA)	-44443.95	57753.91	-0.76954	0.4419
GDPCAP Argentina (ARG)	-1183.147	7471.688	-0.158351	0.8742
GDPCAP Canada (CAN)	-12998.64	4216.572	-3.08275	0.0021***
GDPCAP Colombia (COL)	2726.93	28422.39	0.095943	0.9236
GDPCAP Kenya (KEN)	-25087.02	387265.1	-0.06478	0.9484
GDPCAP Korea (KOR)	-9377.077	2777.731	-3.375804	0.0008***
GDPCAP Morocco (MAR)	9611.344	43532.3	0.220787	0.8253
GDPCAP Peru (PER)	-623.4892	21472.85	-0.029036	0.9768
GDPCAP South Africa (ZAF)	-14558.11	19626.18	-0.74177	0.4585
GDPCAP Spain (ESP)	-10546.08	3617.355	-2.915411	0.0037***
GDPCAP Sudan (SDN)	46635.18	182364.5	0.255725	0.7982
AR(1)	0.659743	0.046753	14.11137	0.0000***
AR(2)	-0.110747	0.053475	-2.071013	0.0388**
AR(3)	0.011672	0.046981	0.248439	0.8039
Adjusted R^2	0.999			
S.E. of regression	15288624			
F-statistic	41081			
Prob(F-statistic)	0.000			
Durban-Watson	1.855			

Level of Statistical Significance: *** = 1%, ** = 5%, * = 10%

The date of signing the Ozone treaty (advanced one year) also carries a negative regression coefficient but was not statistically significant at the ten percent level. Furthermore, four of the regression coefficients on the country-specific GDP per capita variables are positive and statistically significant. These four countries are China, India, Nigeria, and Thailand, with the most significant positive relationship reported for China and Thailand. On the other hand, eight countries reported a negative and statistically relationship. These eight countries are Brazil, France, Japan, Great Brittan, United States, Canada, South Korea, and Spain. Among these countries, the inverse relationship was the weakest for Brazil. For the remaining sixteen countries whose regression coefficients were not statistically significant, seven coefficients were positive while nine were negative.

From another perspective, Table 2 indicates average GDP per capita ranked in descending order for the entire 1960-1998 period. The values in bold face indicate the countries where the current model generates statistically significant results at previously reported in Table 1. The top one-third of the table identifies the wealthier countries where the statistically significant relationship was estimated to be negative, while the lower two-thirds of the table indicates lower income levels where the relationship was statistically significant and positive. The dividing line appears approximately $3,000 which is generally consistent with the findings reported by Cole. As illustrated in Figure 1, the results suggest a rather extensive "plateau" or leveling-off of the growth-pollution relationship for countries with per capital GDP in the range of $1,000 to $3,000. It is perhaps in these transitional countries, such as Brazil, where the introduction of new technologies and more enlightened environmental policies such as greater use of ethanol and renewable energy sources such as hydroelectric power can make the greatest near term contribution. Perhaps Brazil's experience can serve as a good model as discussed below.

The World Bank (May 2006) recently released a report which explores ways for three of the worlds largest and fastest growing economies, China, India, and Brazil, to increase their energy efficiency as an important means of reducing greenhouse gases which is often linked to global warming. China and India rank among the world's 10 top energy users and they are quickly becoming the top green house gas admitters. For example, China's emissions are expected to double by 2020, which will place China ahead of the US as the world's largest greenhouse gas emitter. China is both the world's largest coal producer and consumer. While reliance on coal in their energy mix is projected to decline from 66% to 41% between 2002 and 2030, the level of CO2 emissions is projected to increase from 3.3 billion tons to 7.1 billion tons per year. The study finds that certain cost-effect production retrofits and the adoption of advanced technologies could reduce energy use by 25 percent and 10%, respectively. With the assistance World Bank funding China is encouraging its banks to finance large-scale energy efficient investments. The report indicates that many energy efficiency projects have a return on investment as high as 20-40 percent, with a payback period as short as 2 ½ years. China has officially adopted a goal of becoming a "conservation-oriented society" which gives equally high priority to both energy efficiency and energy development.

India's economy is not as large or quite as fast growing as China's, but India's power generation capacity has tripled over the past two decades and is expect to more than triple again by 2025. This conservative growth estimate is based on an optimistic scenario which includes major efforts to modernize existing power plants, improve transmission/distribution efficiency, and add more efficient generation capacity. In spite of these efforts, C02 emissions are forecast to increase from 1.0 billion to 2.3 billion tons by 2030, much of the increase due to burning low quality coal. Given these forecasts, India's potential energy efficiency market is estimated to exceed $3 billion which would generate savings of more than terawatts hours per year. To help capture these potential savings the Indian government has established a Bureau of Energy Efficiency to promote and coordinate energy efficiency project nationwide. As a consequence, five of India's largest Banks have introduced innovative lending programs to promote energy efficiency among small and medium size enterprises (SME) where energy waste is often high and conservation awareness is frequently quite low. The banks have developed a "cluster" approach to

lending where they have developed a standardized energy efficiency loan available to various groups of small industries. These loans have increased the energy efficiency, profitability and competitiveness of these SMEs.

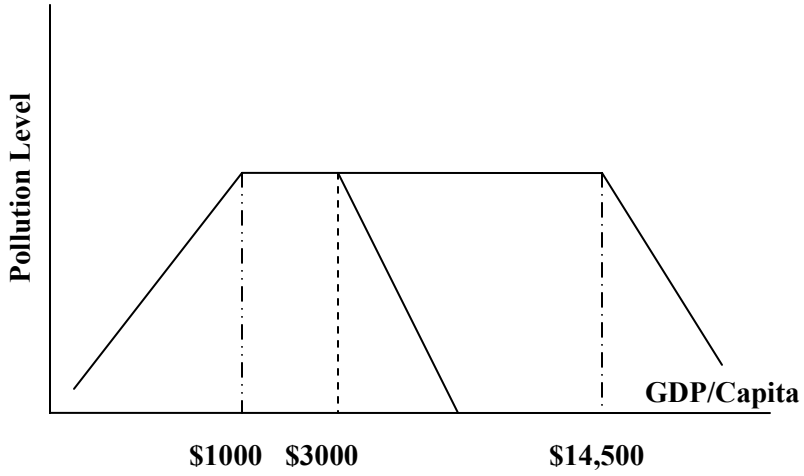
Table 2: Sample Data

Country Name	Elect Power	CO2	Comm. energy	Urban pop (%)	GDP ('95$)	GDP (60-99)	Population	Climate	Ozone
Significant – coefficients in bold									
Japan (JPN)	7286.50	8.97	4042.5	78.5	43609	**27799**	126,410,000	1994	1988
United States(USA)	11936.7	19.82	8023.6	76.8	30166	**21231**	274,894,016	1994	1986
France (FRA)	6287.13	6.33	4356.5	75.2	28333	**20431**	58,398,000	1994	1988
Canada (CAN)	15074.7	15.45	7846.9	76.9	20966	**16430**	30,247,900	1994	1986
Great Britain (GBR)	5326.88	9.15	3887.3	89.4	20718	**14602**	59,255,000	1994	1987
Italy (ITA)	4430.78	7.20	2882.7	66.8	20007	13852	57,588,000	1994	1988
Spain (ESP)	4195.30	6.28	2864.6	77.2	16480	**10852**	39,371,000	1994	1988
Korea, South (KOR)	4712.56	7.83	3550.2	80.4	11022	**5085**	46,430,000	1994	1992
Argentina (ARG)	1891.40	3.79	1708.5	88.9	8463	6815	36,125,000	1994	1990
Brazil (BRA)	1791.09	1.80	1058.6	80.1	4506	**3410**	166,045,568	1994	1990
Significant + coefficients in bold									
South Africa (ZAF)	3831.93	8.30	2643.4	54.3	3923	3987	41,402,392	2000	1990
Mexico (MEX)	1507.82	3.93	1553.7	74.0	3544	2773	95,225,432	1994	1987
Thailand (THA)	1345.18	3.22	1111.8	21.0	2621	**1348**	59,793,500	1995	1989
Colombia (COL)	845.11	1.66	759.2	74.0	2406	1753	40,804,000	1995	1990
Peru (PER)	641.59	1.12	578.0	72.0	2354	2306	24,801,000	1994	1989
Algeria (DZA)	563.12	3.61	910.0	58.8	1566	1440	29,507,000	1994	1993
Morocco (MAR)	442.99	1.15	327.7	54.5	1403	1050	27,775,000	1996	1996
Egypt (EGY)	860.31	1.72	679.6	44.9	1143	715	61,580,000	1995	1988
Philippines (PHI)	426.39	1.04	536.0	56.8	1127	994	72,775,448	1994	1991
Indonesia (IDN)	320.41	1.15	646.2	38.8	972	548	203,678,368	1994	1992
Congo Dem Rep (COG)	42.32	0.05	293.9	29.7	113	279	48,178,168	1995	1995
China (CHN)	721.60	2.50	879.9	31.1	725	**259**	1,242,179,968	1994	1989
Pakistan (PAK)	338.74	0.74	444.1	35.9	500	340	131,582,000	1994	1993
India (IND)	363.48	1.08	481.1	27.8	428	**262**	979,672,896	1994	1991
Bangladesh (BGD)	80.41	0.18	138.5	23.4	348	254	126,564,704	1994	1990
Kenya (KEN)	127.10	0.32	513.3	31.3	340	296	28,726,000	1994	1989
Sudan (SDN)	44.63	0.12	497.4	34.2	290	222	29,978,890	1994	1993
Nigeria (NGA)	84.75	0.65	710.4	42.2	254	**256**	120,817,264	1994	1989

Brazil has one of the largest and most diverse ecosystems in the world and is considered by many to be an environmental leader among developing countries. While Brazil is the world's 10th largest energy user, its emissions of C02 relative to energy utilization is relative low due to heavy reliance on hydroelectricity, extensive use of ethanol and other gasoline blends and substitutes. According to Vatalaro (2006), Brazil has promoted the use of ethanol for over thirty years and ethanol currently meets approximately 40% of Brazil's fuel needs. Most of the gasoline used in Brazil is a blend of 25 percent ethanol, compared to only 10 percent in the United States, where ethanol meets only two percent of America's fuel needs. Brazil produces ethanol efficiently from sugar cane, which produces approximately eight times the amount of energy required to produce it. Furthermore, automotive technology has improved such that a significant number of cars in Brazil run on alcohol, although this percent has declined due to higher production costs for alcohol. In comparison, in the United States ethanol is primarily produced from corn, which yields approximately the same amount of energy as it takes to produce it. Looking into the future, a recent study

by the PEW Center on Global Climate Change (2000) concludes that Brazil will be forced to shift from it current reliance on hydroelectric power to natural gas fueled electricity generating plants.

Figure 1 – GDP per Capita Growth-Pollution Plateau



While gas plants generate 60 percent less carbon dioxide than coal burning units, green house emissions are forecasted to rise rapidly in Brazil. Some estimates suggest that CO2 emissions will likely increase from 302 million to 665 million tons by 2030. Even so Brazil's C02 emissions will remain low in absolute terms. Research indicates that an aggressive policy of energy efficiency could reduce energy demand by as much as 40%, generate savings of $37 billion per year and stabilize C02 emissions by 2020 (Guardian Unlimited, 2006). At the same time Brazil is not without its own unique challenges. According to Gurgel (2006), Brazil needs to curtail extensive deforestation by burning in the Amazon region, which is pumping millions of tons of CO2 into the atmosphere. Experts estimate that approximately 20% of the 1.6 million square miles of rainforest in the Amazon region has been deforested by development, logging, or farming.

To help visualize and interpret the statistical results, Figures 2 shows the graph of the ratio of CO2/GDP for Japan and India. The CO2/GDP ratio is employed as an inverse measure of pollution-efficiency since it indicates the amount of CO2 pollution generated per dollar of real GDP. Thus, a lower ratio indicates greater environment efficiency in the production process, while a higher ratio indicates reduced environment efficiency. Japan's level of pollution efficiency actually declined until the mid 1970's as reflected by a rise in the ratio. On the other hand, the index improved dramatically from 1974 until 1987. Since then the efficiency measure has remained constant. For India the level of pollution efficiency dramatically declined from 1960 through 1992. Since then the measure has remained relatively constant.

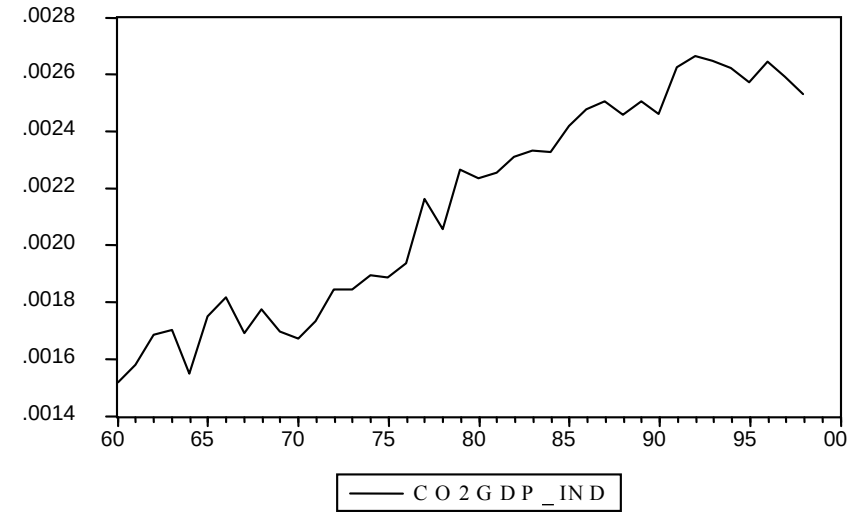
CONCLUSIONS

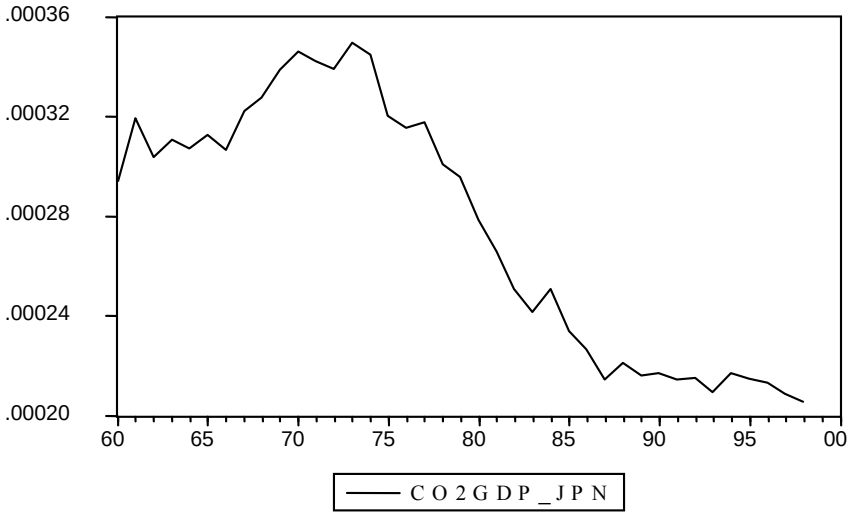
A persistent and reoccurring debate regarding efforts to expand the level of worldwide economic growth revolves around the potential impact on the environment. Some argue that economic growth and environmental protection are contradictory and that resources directed towards a clean environment necessarily represents a drain on the productive capacity of the economy. If true, many countries would be better served if they devoted their scarce resources to expand production facilities and infrastructure investment regardless of the environmental impact. Such "growth-pessimists" argue that investing in a clean environment is a "luxury" which invariably leads to a reduced rate of economic growth. At the opposite end of the debate are the "growth-optimists" who feel that environmental quality is a necessary

prerequisite to sustain economic growth in the long run. One's view regarding the impact of technology and the role of public policy is a crucial part of the debate.

This paper extends an earlier paper by Reichert (2004) by empirically estimating the unique country-specific relationship between the level of economic growth, degree of social commitment, and the extent of environmental pollution for a wide range of both industrialized and newly developing countries. Using data from 28 countries over the period 1975-1998, the paper finds empirical support for an inverted-U shaped economic growth-pollution relationship and identifies the location of individual countries on the curve. Using real GDP per capita as the measure of economic growth and the aggregate level of CO2 as the measure of pollution, the following countries appear to be operating on the rising (positive) portion of the inverted-U relationship: India, China, Nigeria, and Thailand.

Figure 2 - CO2/GDP for Japan and India





On the other hand, the following eight countries appear to lie on the declining (negative) portion of the inverted-U relationship: Brazil, South Korea, Spain, United Kingdom, Canada, France, United States, and Japan. Furthermore, ten of the remaining fourteen countries, with per capita GDP below $4,000 exhibited

a positive regression coefficient, although none were statistically significant. The turning point appears to occur at a level of GDP per capita, perhaps as low as $3,000-4,000 for countries like Brazil which has been a leader in the use of ethanol. It should be added that the shift to a negative relationship is much more definitive when per capita GDP reaches approximately $14,000. But many of these developing countries simply cannot wait decades to achieve this level of wealth. Unfortunately this may not be necessary as demonstrated by Brazil whose current environmental progress supports Hofkes' findings and the work of World Bank's production efficiency program which demonstrate that growth in knowledge and improvements in environmental technology can compensate for an inevitable global increase in the use of natural resources in production.

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HOW TO COMPETE AND HOW TO COMPETE PROFITABLY: A MODEL OF COMPETITIVE POSITIONS AND BUSINESS PERFORMANCE

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ABSTRACT

Competitive strategy still lacks a widely accepted analytical framework. Indeed, to this day, there is still no consensus on its key dimensions and types, and their relationship with performance. This paper proposes a new framework for the study of competitive strategy, which divides the topic into two questions: how to compete and how to compete profitably; related both to market and financial performance. With this aim in mind, the author develops a dynamic causal model of competitive strategies, called the performance and competitive positions model, based on three dimensions: perceived price, perceived differentiation, and costs.

INTRODUCTION

Competitive strategies have been and continue to be a topic within the field of management that has attracted enormous interest (e.g., Kim, Nam and Stimpert, 2004; Rhee and Mehra, 2006; Pecotich, Purdie, and Hattie, 2003). Indeed, since they were popularized by Porter (1980), a great deal has been written on their diverse forms and their relationship with performance, and competitive strategies are still the subject of a great deal of debate (Campbell-Hunt, 2000; Parnell, 2000).

It is widely recognized that, while corporate strategy considers the fundamental question of what line of business the firm should be in (i.e. corporate strategy problem), competitive strategy proposes solutions as to how to compete in a given business, i.e. the business strategy problem (Hofer and Schendel, 1978; White, 1986). This last question will form the pivotal theme of this article.

The question of how to compete has been dealt with in numerous studies and from a variety of perspectives (examples of which can be seen in Campbell-Hunt, 2000; Galbraith and Schendel, 1983; and Herbert and Deresky, 1987). Certain studies deal with a mixture of the corporate and business levels of strategy, as in the case of the grand strategies (see, for example, Pearce, 1982) or the strategic patterns of Miles and Snow (1978). Others have focused solely on the business level strategy, as in the case of the generic competitive strategies proposed by Porter (1980) and the strategy mission/portfolio strategies contributed by Buzzell, Gale, and Sultan (1975), and Gupta and Govindarajan (1984). This study addresses the question of how to compete from the perspective of competitive position, fundamentally represented by the theoretical framework presented by Porter (1980). This approach is the dominant paradigm in present day research (Campbell-Hunt, 2000; Ramos and Ruíz, 2004) and carries with it the advantage of not mixing the questions of where to compete and how to compete.

This article is structured into three parts. In the first part, we study the principal models of competitive positions presented in the specialized literature. The second part is dedicated to the presentation of a new integrative model. The final section includes the main conclusions and implications.

PREVIOUS COMPETITIVE POSITION MODELS

The most famous model of competitive strategies is that of Porter (1980) (Campbell-Hunt, 2000; Ramos and Ruíz, 2004). This author proposes a competitive strategies model based on two dimensions:

competitive scope and competitive advantage. The cross between these two dimensions provides four strategies, which Porter described as "pure" strategies. Figure 1 shows Porter's competitive strategies model and their predicted business performance.

Figure 1: Porter's (1980) Model

Fig. 1.a. Pure competitive strategies

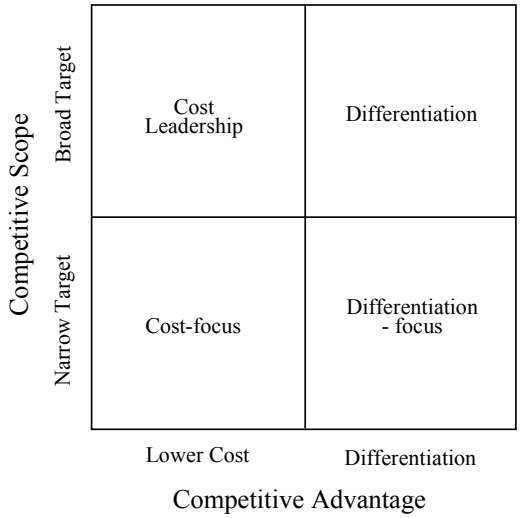
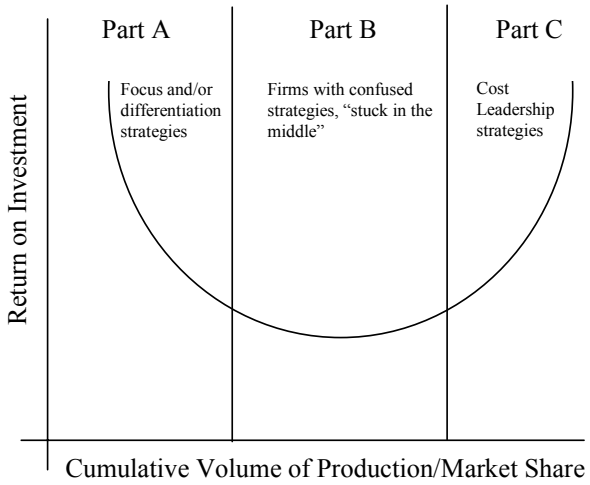


Fig. 1.b. Business performance of different strategies



At around the same time as Porter presented his ideas, Hall (1980) proposed another competitive positions model, in which the two fundamental dimensions were differentiation and cost, splitting Porter's main dimension in two, as later proposed by Hambrick (1983), and Jones and Butler (1988). Hall obtained empirical evidence to suggest that firms with lower costs, operating at reasonable prices, producing fair quality products, and more differentiated firms also with an acceptable level of prices or costs, or even with lower costs, obtained the best market and financial performance. On the other hand, firms with a lower than average differentiation achieved only mediocre performance levels and the worse their performance became, the worse their cost position. This author's model is shown in Figure 2.

Hall's research proposed the possibility that firms might have a high level of differentiation and very low costs. This possibility was refuted by Porter (1980, 1985), according to whom, firms that simultaneously pursue low costs and differentiation would end up "stuck in the middle", and would obtain a lower financial performance than the average for that industry (Figure 1.b).

What stands out in Hall's study is the reference to price as an independent part of competitive strategy, in light of the fact that in Porter's model is totally linked to both cost and differentiation (low cost = low price, and high differentiation = high price). However, in Hall's model, price is not graphically operative. Another weakness appears to be an absence of the separation of market and financial performance, as the model simultaneously foresees the failure and success of both; something which does not occur in a good deal of real-life competitive situations. This weakness was overcome by Karnani (1984), who presented a competitive strategy model for firms in mature oligopolistic markets similar to that of Hall, establishing a causal relationship between "competitive strength", market share and profitability (Figure 3).

Figure 2: Hall's (1980) Model

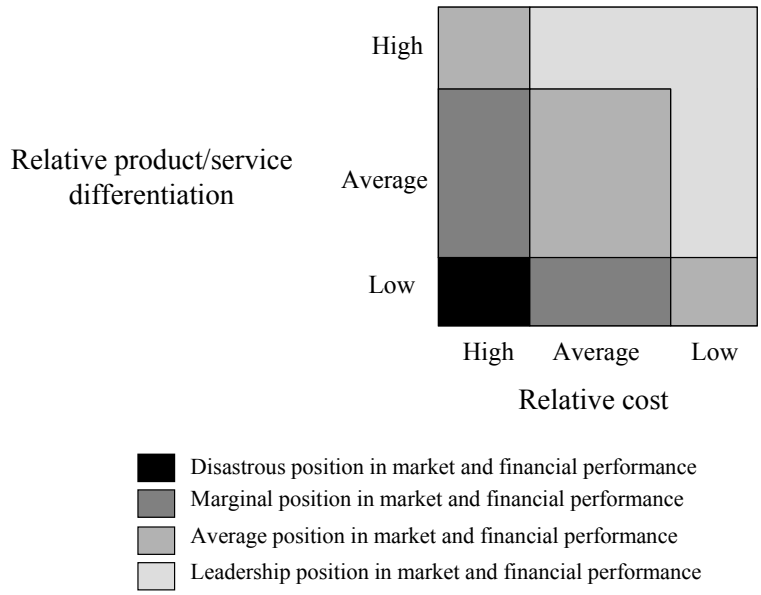
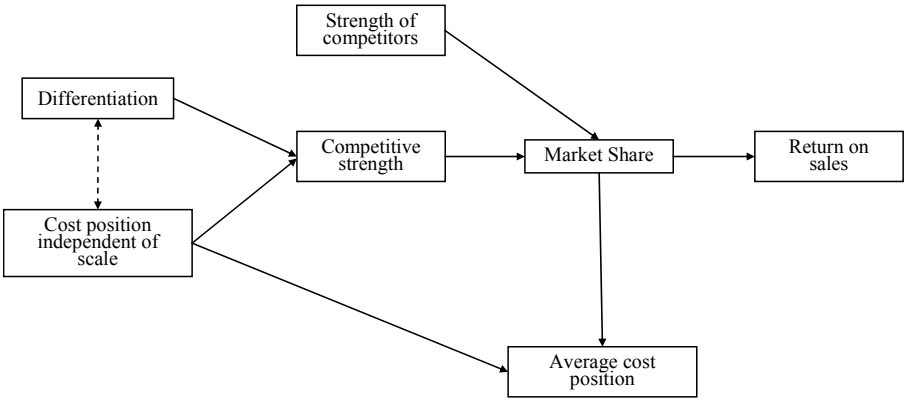


Figure 3: Karnani's (1984) Model



White (1986) proposed a similar model to that of Hall (1980), but with the advantage of illustrating both of Porter's pure strategies and the two types of stuck in the middle, where one is a winning situation and the other a losing position, in terms of profitability. In a similar vein to Porter, White assumed that differentiation entailed high prices. In fact, in his empirical study, he used price as a proxy for differentiation. Figure 4 shows his model and the results of his empirical study.

Figure 4: White's (1986) Model

Cost position	Differentiation position: Low	Differentiation position: High
Low	**Pure cost** ROI=28.6% Sales growth=3.9%	**Cost and differentiation** ROI=30.2% Sales growth=5.9%
High	**No competitive advantage** ROI=4.9% Sales growth=5.9%	**Pure differentiation** ROI=22.1% Sales growth=10.9%

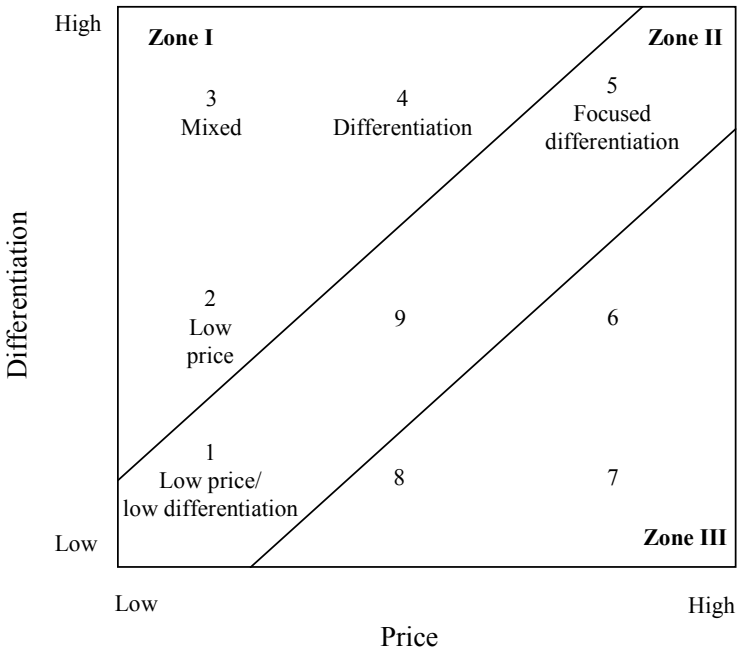
Hill (1988) did not produce a competitive strategies model, but rather studied the effects of differentiation on market and financial performance, analyzing in more detail the competitive strategy that White called "cost and differentiation", known to others as a "mixed strategy" (e.g. Miller and Dess, 1993). According to Hill (1988: 402-403), "investment expenditure aimed at differentiating a product has *two* effects upon demand. The first is to create brand loyalty, decreasing the price elasticity of demand for the firm's product. The second is to broaden the appeal of a product, enabling the firm to capture more of the market at a given price and to increase the volume sold. […] The immediate effect of differentiation will be to increase unit costs. However, if costs fall with increasing volume, the long-term effect may be to reduce unit costs. Three sources of declining cost can be identified: learning effects, economies of scale, and economies of scope".

Hill's study is important because he established a sequence that had previously not included competitive strategy models. This sequence consisted of the following causal chain: If ↑ differentiation and maintaining price → ↑ demand & ↓ price elasticity → ↓ unit cost → ↑ profit margin.

An important step forward in the modeling of competitive strategy as a competitive posture or position came about with the proposal of Mathur (1988). According to this author, when a firm makes decisions concerning competitive strategy, it should be understood that the first "judges" they will encounter are their buyers, and, consequently, it is only what buyers perceive that will serve as a means of answering, in the first instance, the question of how to compete. Moving away from the previous dominant proposals, which incorporated costs as a fundamental dimension in their models (i.e. Hall, 1980, and Porter, 1980), Mathur (1988) said that competitive strategy is basically the strategy which determines the firm's perceived position in terms of price and differentiation (the firm's outputs).

This interpretation of competitive strategy was later illustrated by Bowman (1992), which he presented as his strategy clock or map of competitive position built upon the two dimensions proposed by Mathur: price and differentiation (Figure 5). In the strategy clock, once the firm has identified the industry average perceived price and the industry average degree of perceived differentiation, it can place itself within a simple model of competitive strategies, where those companies creating more demand are situated in Zone I (positions 2, 3, and 4) and those at the opposite end of the scale are found in Zone III (positions 6 to 8). This model provoked great interest because it reduced the question of how to compete to six possible competitive positions (1 to 5, and 9). However, Bowman's model did not allow for the connection of competitive positions to profitability.

Figure 5: Bowman's (1992) Model



Most of the models proposed by other authors not expressly discussed in the previous paragraphs are variations on those presented herein. In general, they all function using two or three dimensions, and usually establish direct relations with business performance, normally measured through sales growth and returns. For example, Miller and Dess (1993) use a model with three dimensions (relative cost, relative differentiation and relative focus) that produce seven competitive strategies, assessed with the ROI, cash flow on investment, sales growth, and market share gained. Campbell-Hunt (2000) presents a similar model to that of White (1986). However, it also considers the dimension of focus, which leads to the proposal of seven types of competitive strategies, assessed according to financial return and growth. Spanos and Lioukas (2001) present a framework in which competitive strategy is defined by firm differentiation and by costs. In this model, competitive strategy, the forces of industry (barriers to entry, power over buyers…), and firm assets, jointly and directly determine both market and financial performance (market share, absolute sales volume, increase in market share and sales, ROE, ROS and net profits).

PERFORMANCE AND COMPETITIVE POSITIONS MODEL

This section deals with the proposal of a new competitive positions model based on three dimensions (price, differentiation and cost) and two types of business performance (market and financial performance). The model builds on studies by Hall (1980), Karnani (1984), Hill (1988), Mathur (1994), and Bowman (1992). Its main contribution is that of joining related conceptual frameworks that have hitherto been treated separately, in an integrated theoretical and graphical framework.

The work of Bowman (1992) and especially that of Mathur (1994) are used in the model to define the "external" competitive position (ECP). The contributions of Karnani (1984) and Hill (1988) are used to lend weight to the sequence "ECP → market performance → cost → profits", and the latter study provides the basis for the model's graphic development. The study by Hall (1980) has allowed for the consideration of three dimensions (price, cost and differentiation) rather than two (cost and differentiation) in defining competitive strategy.

Therefore, the proposed model:

1. Separates Mathur's (1988) ECP from Porter's competitive strategy (1980), by not mixing ECP with costs.
2. Differentiates between two types of business performance: market and financial performance, following the ideas of Karnani (1984) and Hill (1988), and thus moves away from studies that analyze these aspects without establishing a causal relationship between them (e.g. Miles and Dess, 1993; White, 1986)
3. Works with costs as a consequence of the ECP and as one of the causes of financial performance (Hall, 1980; Hill, 1988).

We will look at these questions in more detail in the following sections.

Business Performance

The business strategy problem is how to compete in the long run (Hofer and Schendel, 1978). Several authors have stressed the importance of price, differentiation, and cost, in business performance (e.g. Bowman, 1992; Hall, 1980; Maital, 1994), but few have distinguished the sequential relationship between the market and financial performance (e.g. Hill, 1988; Karnani, 1984). In our opinion, if a competitive strategies model is to be truly explanatory, it should divide the *business strategy problem* into two levels: how to compete and how to compete profitably; as it is one thing is to be successful in a market and quite another to make money from the position occupied by the firm.

The model proposed by Bowman (1992) is suitable for representing the "external" competitive position (ECP), which explains market performance and corresponds to the matter of how to compete, but it is inappropriate if the objective is to discover whether a competitive position will be profitable (i.e., it does not answer the question of how to compete profitably), as it does not explicitly consider cost position.

Financial performance is more complex than market performance, as it depends on the firm's level of sales (which is a measure of market performance) and internal efficiency (i.e. costs). A firm may be obtaining excellent market performance, for example, in terms of revenue, and still be losing money, because costs are greater than income from sales (Figure 6, cell II). If this situation is prolonged, the firm will not normally survive in the long term if drastic measures are not taken. However, the situation may be temporary if the firm manages to reduce its unit costs thanks to learning effects, economies of scale, and economies of scope, moving from cell II to cell I (see, the study by Hill, 1988, for a detailed analysis of the effect of differentiation upon demand, cost, and profits).

Figure 6: Market and Financial Performance

		Financial Performance: High	Financial Performance: Low
Market performance	High	I	II
	Low	III	IV

Some firms enjoy a certain degree of monopoly in their area of influence which cannot be put down to differentiation. This degree of monopoly is due, among other things, to a high level of switching costs for buyers (see Porter, 1980), which means that, despite the fact that the firm is offering an inferior price/value compared to its competitors, buyers continue to purchase its products or services (consider,

e.g., a local shop that offers more expensive and less quality goods and then ask the question, how can they continue to sell?). Firms that enjoy a certain degree of monopoly can sell at expensive prices and spend little money on differentiation, which produces mediocre results in market performance, but gives a high financial performance (cell III). Obviously, the appearance of a new competitor or the removal of the power of monopoly may induce the move from cell III to cell IV.

Cell III also represents the case of firms that are withdrawing investment. Such organizations have decided to abandon the business to all intents and purposes and are simply reaping as much benefit as the business permits. In the short term, they will remain in cell III, but little by little they will begin to move into cell IV.

Cell IV represents the case of firms that fail in their ECP and in solving the problem of efficiency, which leads them firstly to poor sales, and subsequently to scarce profit and even debts. This is normally the case of firms with neither a clear competitive advantage (be it in differentiation or in cost) nor a clear competitive strategy.

In short, financial performance is a consequence of market performance and of internal efficiency (costs); and market performance is a consequence of the ECP, which, in turn, is a result of prices and differentiation.

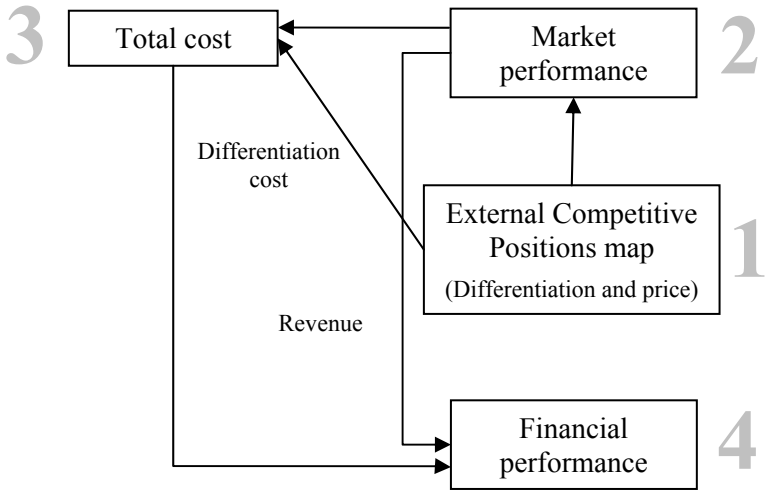
The Performance and Competitive Positions Model

The *performance and competitive positions model* (PCPM) is based upon that logic. Its synthetic graphical representation (Figure 7) shows the *sequence of causality* deduced from the theory in such a way that competitive strategy is defined on two levels (Hill, 1988; Mathur, 1988): price and differentiation on the first level (part 1 of Figure 7) and cost, shown on the second level (part 3). These are linked to performance at two different moments in time (Hill, 1988; Karnani, 1984): before and after the intervention of costs (parts 2 and 4). The reasoning behind this is simple. The effect of ECP is to bring about a "response" to the market. The demand generated by each firm, thanks to their ECP, implies a particular scale of production, which allows them to obtain, together with the cost of differentiation, the total cost for the firm. Lastly, costs are subtracted from sales, thus obtaining financial performance.

From the models examined in the previous section, the most similar to ours is that of Karnani (1984) (Figure 3), however, they differ in one vital aspect. Karnani follows the Academy tradition (Hall, 1980; White, 1986) by calculating "competitive strength" from the cost position and from differentiation. Mathur (1988) proposes that this is a flawed conception, as buyers do not "see" costs, merely prices. Our model calculates the "competitive strength" (called *external competitive position*) based on prices and differentiation, which is a radical difference in basic perspective compared to Karnani's model.

Figure 8 shows the *analytical version* of the PCPM. To illustrate how the model works, the graph shows only one firm (A) and two different moments in time (0 and 1). Firm A holds an external competitive position (ECP) at moment 0 (represented by A_0 in part 1 of Figure 8) which creates *demand* q_0 (part 2). This demand implies a scale of production that generates *unit costs* of uc_0 (part 3), which, when transferred to *financial performance* (part 4), result in zero *profit per unit* (UP = 0), in accordance with the equation UP = P – UC.

Figure 7: Performance and Competitive Positions Model (PCPM)



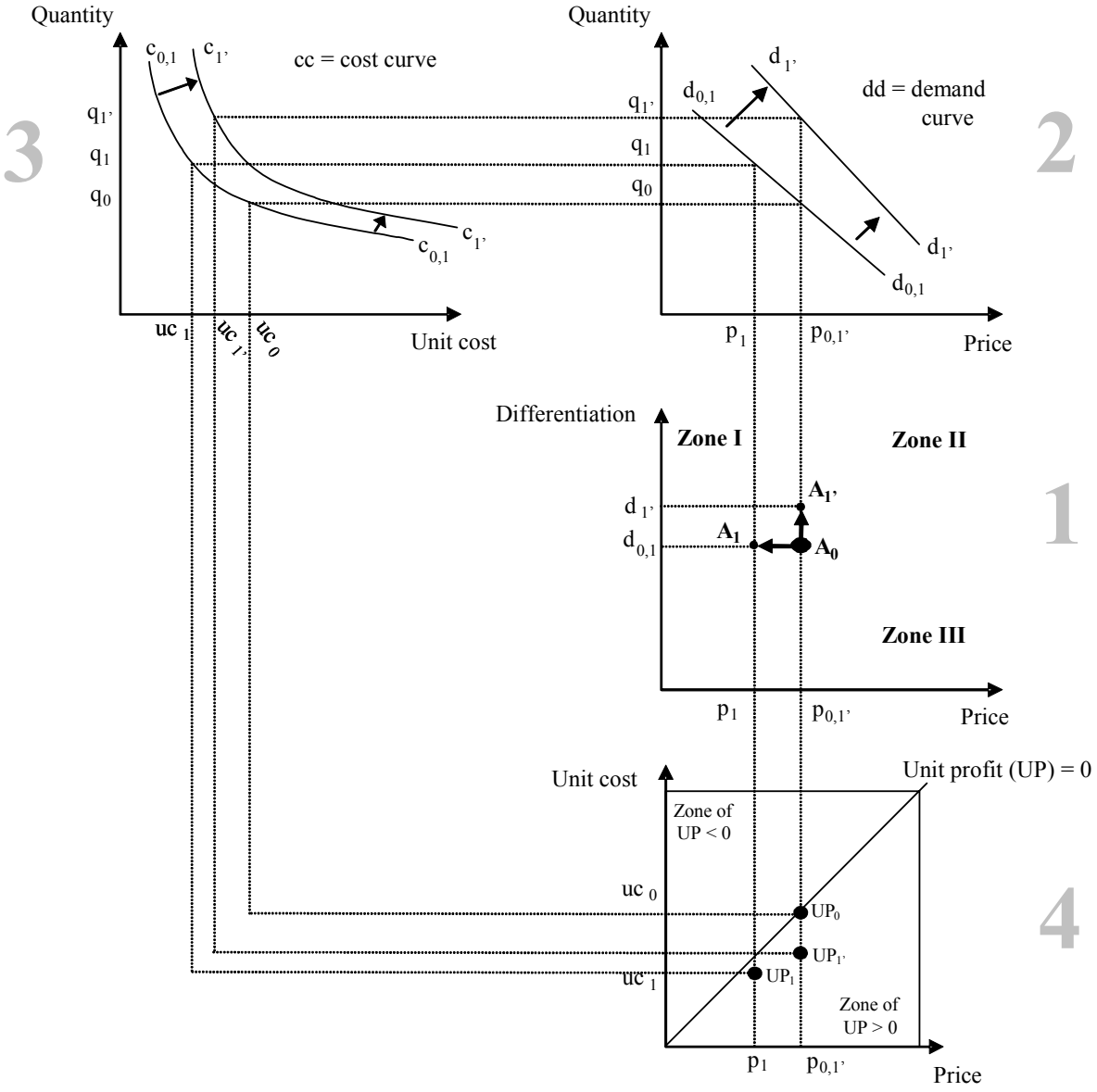
The graph also represents two competitive movements. In particular, it shows what would happen if A lowered its prices without changing the differentiation, going from A_0 to A_1, and what would happen if A raised its differentiation (for example, improving product quality) without changing the price, moving from A_0 to $A_{1'}$. Assuming that the other variables remain constant (especially the ECP of the firm's competitors), it can be observed that A's *competitive maneuvers* bring about an improvement, not only in *market performance* ($q_0 < q_1 < q_{1'}$), but also in *financial performance* ($UP_0 < UP_1 < UP_{1'}$). It can therefore be concluded that the new ECPs respond favorably to the two key questions related to competitive strategy: how to compete and how to compete profitably, although option 1' ($A_{1'}$) shows better market and financial performance.

The model is extremely useful in a graphic sense, despite the inherent complexities involved in calculating demand and cost curves. However, by adapting the curves with intuition and foresight, many competitive movements can be simulated, such as the competitive movements of the firm's more relevant market rivals, as well as their possible attacks or counterattacks on the firm's ECP.

Limitations and Contextual Application

The use of the PCPM is directly proportional to the firm's capacity to estimate, albeit intuitively, the demand and cost curves of its main competitors and, above all, its own. The model is not highly operative in sectors where there are large quantities of market segments with very different definitions of differentiation. Neither is it useful in markets where, for economic or political reasons (geographical distance, administrative concessions…) competition is developed in the form of a pseudomonopoly; nor does it function well if the buyers, for whatever reason, are not willing to change supplier (for example due to high switching costs). However, the model works well in situations where competition is fairly open, buyers abound and are reasonably homogeneous in their appreciation of suppliers' performance, besides having a sound awareness of what is offered by several suppliers without incurring large switching costs. As a result of all these reasons, it is important to assess whether the industry for analysis allows the application of the model, although whenever there is a certain rivalry between two firms, some useful elements can be found via its application and the tools presented herein.

Figure 8: Analytical Version of the PCPM



Note
In t = 1', displacement of the demand curve towards the right occurs because, for all price levels, buyers demand the product in greater quantity, due to improvement in differentiation. At the same time, as differentiation decreases the elasticity of demand, a modification in the slope of the curve also takes place. In t = 1', the cost curve is displaced towards the right because, for all levels of scale, costs increase as a consequence of the expense incurred by the firm in improving value.

According to Chrisman, Hofer, and Boulton (1988: 415), "only scope, segment differentiation, and types of competitive weapons are needed to describe an organization's competitive business substrategy". The PCPM does not include segment differentiation nor scope. Some authors have stated that the scope dimension is secondary to the quest for and use of competitive advantages (e.g., Karnani, 1984), and according to Wright (1987), in the case of smaller firms with lesser access to resources, scope is not a strategy of dimension, as all firms of this kind are focused (i.e. they concentrate on a narrow scope). On the other hand, according to Murray (1988), a necessary condition for segment differentiation in order to be viable is market heterogeneity, which makes our model a particularly useful tool in the case of smaller

firms and homogeneous markets, whilst having scarce value for highly segmented markets from the customers' point of view

The PCPM parts from a causal relation which has already been documented in the relevant literature (Hill, 1988). In this relation, costs are a consequence of the ECP and market performance, and in turn, are the cause of financial performance. Obviously, costs are not only a function of production costs and costs due to differentiation, which, to a large extent, limits the scope of the model in sectors where cost formation is less dependent on these two causes.

IMPLICATIONS AND CONCLUSIONS

Despite the enormous quantity of empirical and theoretical contributions that have appeared in the last 25 years, competitive strategy still lacks an analytical framework which is greeted with wholehearted acceptance on the part of both managers and academics. Basic topics such as the dimensions which define strategy or the different theoretical types of strategy and their foreseeable performance are still open to debate (Campbell-Hunt, 2000; Parnell, 2000).

For this study, two questions define the concept of competitive strategy: how to compete and how to compete profitably. The first question points to competitive position and the firm's success in the market, a facet which is ultimately judged by the buyer, while the second is a question of returns. They are both necessary and are interrelated, whilst being different in nature. The interpretation of this problem has led us to propose a framework which is divided into two levels, each one related to a different type of performance.

The problem of how to compete can be resolved using the two dimensions that are really seen by buyers: prices and differentiation. The result of this competitive position should be assessed only by measurements of market performance. On the other hand, resolving the question of how to compete profitably leads us to introduce a third essential dimension: cost. In this way, price, differentiation, market performance and cost can at last be related by measurements of financial performance. Seen from this perspective, having market success and earning money are consequences of different causes, although they are related.

To formalize this theory, this research has proposed a causal model called the PCPM (performance and competitive positions model). The PCPM proposes a new framework for managers and academics for the conception and empirical study of competitive strategy. The model recommends that:

1. Costs should not be used in the definition of a firm's competitive position (a good deal of the controversy in academic circles is due to its inclusion). Costs are obviously extremely important as businesses depend on them and they represent a condition for long-term viability, but they do not play a part in defining the firm's competitive position.
2. Market and financial performance are treated separately and sequentially (a large amount of academic controversy arises from the absence of this separation and sequencing). Particularly in the case of managers, the model suggests they would do well to consider whether they are searching for a competitive advantage that will benefit both types of performance or only one, in detriment to the other. For example, a business with a certain amount of monopoly on the market due to geographical location might be interested in maintaining a weak external competitive position (ECP), placed in Zone III of Figure 5. Thus, its competitive position would provide poor market performance, but perhaps high financial performance if the firm were capable of maintaining high prices. Alternatively, a business with high costs could opt for "market quota buying", making its ECP very attractive (Zone I of Figure 5) through an increase, for example, of product quality. If the firm managed to notably raise economies of scale due to a rise in sales, what started as an improvement in market performance

could, after a certain amount of losses, turn into profit. These examples show the desirability of separating the two types of performance, both in terms of academic research and in the practice of management.

3. ECP should be considered subjective and relative. It is subjective because it depends on the perceptions of buyers and it is relative because it is dependent on the ECPs of others (e.g. if a firm lowers its price, and its competitors do the same but on a bigger scale, the effect for the firm will be to have increased the price). Therefore, whenever competitive strategy is analyzed from the perspective of the PCPM, the manager or researcher would benefit from bearing in mind that the measurements obtained for price and differentiation should preferably be obtained from the buyer in a relative way. Suitable questions to ask might be of the type, does firm x have a price way under, under, similar to, over or way over that of its competitors? or Is the quality of products made by firm x far below, below, similar to, higher or much higher than that of its competitors?

The model presented herein is not without its limitations. Despite the step it implies towards synthesis and integration, there is still a long way to go. Future research should attempt to overcome these limits (by introducing market segmentation, allowing the analysis of pseudomonopolies, etc.). Moreover, an attempt should be made to extend the model to diversified firms with multiple ECPs. It would also be interesting to develop a theory of time lags between causes and effects, making theoretical propositions and later empirical contrasts of market response times and financial performance in the face of variations in the ECP.

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BIOGRAPHY

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THE DETERMINANTS OF THE CAPITAL STRUCTURE OF FINANCIAL FIRMS IN NIGERIA: THE FINANCIAL MANAGERS' PERSPECTIVES

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ABSTRACT

The paper examined the considerable factors in deciding on the appropriate amount of equity and debt in the Nigerian banking industry, and the factors influencing banks' capital structure. Data were gathered through questionnaires administered to the financial managers of 25 listed banks in Nigeria. Cross tabulations and Chi-square were used for data analysis. The result suggests that credit-rating, volatility of earnings and cash flow, bankruptcy or near-bankruptcy, financial distress, transaction costs, fees for issuing debt, and financial flexibility are the important factors in choosing appropriate amount of debt. The most important factor that affects banks' choice between short- and long-term debts is matching the maturity of debt with life of the asset. The study also reveals that ownership structure and management control, growth and opportunity, profitability, issuing cost, and tax economics associated with debt are the major factors influencing bank's capital structure. It is, therefore, recommended that banks should adopt a mixed source of financing and choose appropriate ownership structure and management policy.

INTRODUCTION

Capital structure deals with how companies finance their operation. An ongoing debate in corporate finance concerns the question of firm's optimal capital structure, that is, problem of how firms choose and adjust their strategic mix of securities. At the outset of such debate is the question of the relevance of firm's strategic financing decisions for its own valuation. The question then is, is there a way of dividing a firm's capital into debt and equity so as to maximize the value of the firm? From a practical viewpoint, this question is of utmost importance to corporate financial managers

A recent survey by Graham and Harvey (2001) among US firms reveals that managers seek a target debt-equity ratio. However, due to random events or other changes, firms may temporarily deviate from their optimal capital structure and then gradually work back to the optimum.

Lack of adequate capital has been identified as the major cause of business failure. There is no doubt that the banking sector plays a significant role in the economy of any country. In the effort to raise capital and the pursuance of optimal capital structure, banks need to adjust and mix both debt and equity strategically in order to finance their operations efficiently and effectively. This implies that banks should neither be highly geared nor lowly geared in order to maximize the value of the firm.
In addition, the Central Bank of Nigeria has set the minimum capital base of ₦25 billion in regulating the banking industry. To meet up with this requirement, the banks must raise capital. Nigerian banks are still far from achieving optimal capital structure and significantly, this is at the peril of both the providers of capital and the banking industry. Thus, this study will assist Nigerian banks decide on the appropriate mix of debt and equity that will help in achieving optimal capital structure.

In the light of this, the paper attempts to investigate the practices and determinants of the capital structure of the Nigerian listed banks. To properly address this problem, this paper will answer the following questions:
- What are the important factors in choosing appropriate amount of debt?
- How are banks financed and which source has been most effective?
- What are the factors responsible for making equity issue?

- What are the potential determinants of banks' capital structure?

To meet the main objective, the study focused on the following specific objectives.
(i) To find out the important factors in choosing appropriate amount of debt.
(ii) To verify how banks are financed and the most effective source.
(iii) To identify the factors responsible for making equity issue.
(iv) To examine the potential determinants of banks' capital structure.
The rest of the paper contains four sections. Section 2 provides a brief literature review. Section 3 deals with research methods while Section 4 presents the results. Concluding remarks follow in Section 5.

LITERATURE REVIEW

Since the foundational work of Modigliani and Miller (1958), a number of authors extended their capital structure irrelevancy theory. The existing literature on the subject also thoroughly describes the various attempts to modeling corporate debt equity policy. However, what optimal mix of securities a firm should issue still remains undetermined.

Until recently, corporate finance, as an area of research investigation in developing countries has not been given serious attention. The reasons for this are not far fetched. Many developing countries initially chose a state-sponsored route to development, with a relatively insignificant role assigned to the private corporate sector, especially before financial liberalization as the case in Nigeria. In the poorer countries, irrespective of development strategy, there is only an embryonic corporate sector. Moreover, most of the corporate financing needs were met by regional and international development banks, which either took an equity interest in the firms or provided the debt component of a firm's capital. However, in almost all these countries, development banks have experienced serious difficulties (Murinde and Kariisa-Kasa, 1997).

Existing empirical evidence is based mainly on data from developed countries. For example, Bradley et al (1984), Kim and Sorensen (1986), Friend and Lang (1988), Titman and Wessels (1988) and Chaplinsky and Niehaus (1993) focus on United States and Japanese manufacturing corporations; Rajan and Zingales (1995) examine firms from G 7 countries; and Wald (1999) uses data from G 7 countries except Canada and Italy. Findings based on data from developing countries appeared only, in recent years, for example in Booth et.al (2001), Omet and Mashhardive (2003), Balla and Mateus (2003); Green, Murinde and Suppakitjarak (2003); Chen (2003), Baner (2004), Green and Tong (2004), etc.

Furthermore, empirical research on corporate finance has to a certain extent, frequently disregarded financial industry. Overall, it seems that the investigation of capital structure of financial firms such as banks has been largely overlooked. Thus, there is a conspicuous gap in the empirical research on capital structure of corporate financial firms in Nigeria. Hence, the issue of determinants of capital structure of financial firms is yet to be settled at the empirical level in Nigeria given the present state of capital market.

DATA AND METHODOLOGY

The target population was defined as the financial managers of all listed banks on the Nigerian Stock Exchange Market. Primary data was mainly used and was obtained through a questionnaire survey. It was administered to a sample of 25 financial managers giving a response rate of 100 percent. The data collected were analyzed, using cross tabulations and the Chi-square test.

RESULTS

This section presents and discusses the evidence gathered in questions 1 to 6 of the survey conducted on twenty-five (25) financial managers of Nigerian Banks.

Factors in Choosing the Appropriate Amount of Debt

Financial managers were asked to rate on a scale from 1 (not important) to 5 (very important) the importance assigned to each item in a list of 8 factors affecting the choice of appropriate amount of debt. The mean scores of each factor are shown in table 1.

Table 1: Factors in Choosing Appropriate Amount of Debt

Factors	**Mean Scores**
Tax advantage of interest deductibility	3.73
Potential cost of bankrupt or near-bankrupt financial distress.	3.95
Debt levels of other firms in ones	3.36
Industry credit rating	4.55
Transaction costs and fees for issuing debt	3.95
Personal tax cost that investors face when they reserve interest income	2.82
Financial flexibility	3.95
Volatility of earnings and cash flow	4.50

Evidence shows that the most important factor in choosing appropriate amount of debts for banks is credit rating, which has a mean score of 4.55. The analysis indicates that out of 22 respondents, 40% agreed that it is an important factor, 32% felt it was fairly important, 8% selected hardly important while 4% each were for both not important and very important.

The next factor is volatility of earnings and cash flow with a mean score of 4.5. The analysis shows that 64% of the 22 respondents agreed that it is very important factor, 12% believed it is very important, 8% felt it is important while 4% suggested that it is not an important factor. The second least important factor is debt levels of other firms in the industry, which has a mean score of 3.36 while the least important factor is the personal tax cost that investors face when they reserve interest income with a mean score of 2.82.

Conclusively, the most important factor in choosing the appropriate amount of debt for banks is credit rating while the least important factor is personal tax cost that investors face when they reserve interest income.

Preference for Funding

There were responses from 22 banks out of 25 banks; the remaining 3 banks have no debt issue at all. They finance their operations mainly through equity and retained earnings. These banks are Zenith Bank, Intercontinental Bank and Guarantee Trust Bank. Another interesting finding relate to attitudes to finance source. Firstly, respondents were asked about how they prefer to fund their bank. Is it through internal, external, mixed sources or is there no preference?

The result shows that out of 25 responses, 80% prefer the mix source, 12% prefer the internal source, 4% prefer the external source and 4% have no preference at all. This is indicated in the table 2 below.

Table 2: Preference to Funding Bank

	Frequency	Percent	Valid Percent	Cumulative
Valid internal	3	12.0	12.0	12.0
External	1	4.0	4.0	16.0
Mix	20	80.0	80.0	96.0
No preference	1	4.0	4.0	100.0
Total	25	100.00	100.00	

Secondly, the respondents were asked to specify the percentage of their funding sources from the following, short (up to 1 year), medium (up to 5 years), long (> 5 years) and terms do not matter. Here, the respondents were reluctant to give out the information. Only 3 out of 25 responded

Thirdly, respondents were asked to give reasons why they have preferences for a particular source. The result shows that they have preference for short-term source because it is cheap, liquid and easily repayable. They have preferences for medium term because it bridges the gap between long term and short term and is easily available. Also, they have preference for long-term source because it is used for planning; interest rate is low and the repayment period is long.

Lastly, they were asked to indicate the sources, which have been most effective. The results are presented in Table 3. Here, the result indicates that the mix source is the most effective with 72%, followed by internal source with 20% and lastly, external source with 8% as shown in table 3.

Table 3: Most Effective Source

	Frequency	Percentage	Valid Percentage	Cumulative Percentage
Valid internal	5	20.0	20.0	20.0
External	2	8.0	8.8	28.0
Mix	18	72.0	72.0	100.0
Total	25	100.0	100.0	

Factors Affecting Banks' Choice between Short and Long Term Debt

Financial managers were required to rate on a scale from 1 (not important) to 5 (very important), the level of importance of each factor in a list of six in banks choice between short term and long-term debt. Table 4 shows the mean score of each factor.

Table 4: Factors Affecting Banks' Choice between Short and Long Term Debt

Factors	Mean Score
Issuing short term when waiting for long-term market interest rate to decline.	3.64
Matching the maturity of debt with life of asset.	4.55
Borrowing short term so that returns from new project can be captured by shareholders	2.95
Expect rating to improve so as to borrow short term.	2.64
Borrowing short term reduces chance that banks will want to take on risky projects.	3.6

This result shows that matching the maturity of debt with the life of asset is the most important factor with a mean score of 4.55. Analysis shows that out of 22 responses, 64% indicates that it is a very important factor, 12% important, 8% fairly important and 4% hardly important.

Another factor that is important is issuing short-term debt when waiting for long-term market interest rate to decline, with a mean score of 3.64. Analysis shows that 32% agree that the point is important, 20% very important, 15% hardly important, 12% fairly important and 8% not important. The next important factor is borrowing short term loan which reduces the chance that bank will want to take on risky projects. This has a mean score of 3.60. Analysis shows that 40% agreed that it is an important factor, 20% fairly important, 16% very important, 8% not important and 4% hardly important.

The second least important factor that affects bank's choice between short and long-term debt is borrowing on short term so that shareholders can capture returns from new projects. This has a mean score of 2.95 and analysis indicates that out of 22 respondents, 32% agreed it is important, 28% fairly important, 16% not important, 8% hardly important, and 4% very important.

The least important factor is expecting rating to improve so as to borrow short-term loan. The mean score is 2.64. From the responses of the 22 respondents, 28% agreed it is hardly important, 20% important, 2% important, 16% not important, and 4% very important.

Only 22 out of 25 respondents could respond to that section because the remaining 3 do not have any debt issue. Conclusively, the most important factor that affects banks' choice between short and long-term debt is matching the maturity of debt with life of the asset while the least important factor is expected rating to improve so as to borrow short term.

Factors Responsible for Making Equity Issue

Another interesting finding relates to features associated with equity and debt issues. The first issue in this section relates to factors responsible for making equity issues. The mean score of each factor is shown in table 5. The financial managers were asked to rate on a scale from 1 (not responsible) to 5 (highly responsible) the factors responsible for making equity issue.

Table 5: Factors Responsible for Making Equity Issue

Factors	**Mean Score**
To fund a major expansion	4.28
To make an acquisition	3.74
To reduce leverage	3.17
To reduce leverage if market conditions are right	3.04

The most important factor is to fund a major expansion with a mean score of 4.28. The analysis shows that out of 25 responses, 44% agreed that it is highly responsible, 40% responsible, 16% fairly responsible. The next factor is to make an acquisition. This has a mean score of 3.74. The analysis shows that out of 23 respondents, 4% indicated that it is responsible, 20% agreed it is highly responsible, 20% felt it is fairly responsible and 8% refused to give their opinion.

The second least important factor is "to reduce leverage with a mean score of 3.17. Findings show that out of 24 respondents, 48% indicate that it is responsible, 20% not responsible, 12% fairly responsible, 8% hardly responsible, 8% highly responsible and 4% did not respond.

The least important factor is to reduce leverage if market conditions are right. It has a mean score of 3.04. The result shows that out of 23 respondents, 40% support that it is fairly responsible, 24% that it is responsible, 4% not responsible, 4% responsible and 8% withheld their opinion.

How Often Should a Debt Issue Be Made?

Respondents were also asked to identify the frequency with which they make debt issue in their banks. Out of 25 respondents, only 18 respond to this question. 48% indicated that they make debt issue as the need arises, 8% monthly, 8% quarterly, 4% yearly and 4% indicate that they make debt issue bi-annually. 28% make no disclosure. This is shown in table 6 below.

Table 6: How Often Do You Make a Debt Issue?

	Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Valid monthly	2	8.0	11.1	11.1
Quarterly	2	8.0	11.1	22.2
Bi-annually	1	4.0	5.6	27.8
Yearly	1	4.0	5.6	33.3
Others (specify)	12	48.0	66.7	100.0
Total	18	72.0	100.0	
Missing system	7	28.0		
Total	25	100.00		

Factors Influencing Banks' Capital Structure

There are some factors that influence the bank's capital structure. Financial managers are asked to appraise the influence of such factors on a scale of 1 (least important) to 5 (most important) as they affect banks' capital structure. Table 7 shows the mean score of each factor.

Table 7: Factors Influencing Banks' Capital Structure

Determinant	**Mean Score**
Ownership structure and management control	4.64
Size of the firm	4.00
Growth opportunity	4.44
Profitability	4.44
Uniqueness of the firm and its reputation	3.88
Tangibility	3.50
Issuing cost	3.22
Tax economy associated with debt financing	3.48
Risk and cost of financial distress	3.72
Earnings per share	3.64

The finding shows that ownership structure and management control is the most important factor with the mean score of 4.64. Analysis shows that out of 25 respondents, 64% strongly agreed while the remaining 36% agreed that it is an important factor.

The second important factors are growth opportunity and profitability both with the mean score of 4.44. Analysis shows that out of 25 respondents, 52% strongly agreed, 40% agreed and 8% slightly disagreed that growth opportunity is relevant factor in determining banks' capital structure while 56% strongly

agreed, 36% agreed, 4% slightly disagreed and 40% strongly disagreed that profitability is a relevant factor. Next in importance is size of the firm. Research shows that it has a mean score of 4.0 and out of 25 respondents, 24 respond with 48% strongly agreed, 48% agreed and 4% of no response.

The uniqueness of the firm and its reputation is another factor with a mean score of 3.88. Out of 25 respondents, 40% strongly agreed, 32% agreed, 16% disagreed, and 12% slightly disagreed. The risk and cost of financial distress has a mean score of 3.72. Analysis shows that 25 responses are obtained out of which 52% agreed, 20% strongly agreed, 12% slightly disagreed, 12% disagreed, and 4% strongly disagreed. Earning per share that has weak influence on capital structure has a mean score of 3.64. Analysis shows that out of 25 responses, 48% agreed, 24% strongly agreed, 12% strongly disagreed, 5% disagreed, and another 8% slightly disagreed.

Tangibility as a weak factor has a mean score of 3.5, and 24 out of 25 responded with 44% agreed, 20% slightly disagreed, 20% disagreed, 12% strongly agreed and 4% refused to give their opinion. Tax economies associated with debt financing and issuing cost, which is seen to have the weakest influence on banks capital structure, have the mean scores of 3.48 and 3.22 respectively. Analysis show that out of 25 responses, 44% agreed, 20% disagreed, 16% slightly disagreed, 16% strongly agreed and 4% strongly disagreed that tax economies associated with debt financing influence capital structure of banks, while out of 25 respondents, 23 respondents gave their responses that issuing cost influence capital structure. The proportion of their responses is 44% agreed, 32% slightly disagreed, 12% disagreed, 4% strongly disagreed, and the remaining 8% represents the proportion that failed to give their response.

Hypothesis Testing

Ho: There is no significant relationship between capital structure of banks and their determinants.
H_1: There is a significant relationship between capital structure of banks and their determinants.

To test this hypothesis, 12 factors were listed as likely determinants of capital structure. Respondents were to state their degree of agreement or disagreement with each statement. A non-parametric test of association based on one sample, chi-square test was employed to test the differences in the opinion of respondents on each of the possible determinants of capital structure.

Among the 12 factors listed, 7 of them were tested. They are growth opportunities, profitability, tangibility, issuing cost, tax economics associated with debt financing, risk/cost of financial distress and earnings per share. 6 out of the 7 factors were significant predictors of capital structure. In other words, there is a significant difference in the opinion of respondents with respect to 6 out of the 7 factors proposed. The probabilities associated with chi-square value for each of the factors is low ($p < 0.05$).

Table 8: Chi square distribution showing determinants of capital structure of banks

Determinants	**Chi-square**	**d.f**	**P. Value**
1. Growth opportunity	7.760	2	0.021
2. Profitability	19.640	3	0.000
3. Tangibility	6.000	3	n.s
4. Issuing cost	10.913	4	0.012
5. Tax economics associated with debt financing.	10.800	4	0.029
6. Risk/cost of financial distress and insolvency	17.600	4	0.001
7. Earnings per share	14.400	4	0.006

NS = Not significant

CONCLUSION

The study identified factors to be considered in choosing appropriate amount of debt for banks in order in which they are responsible. They include credit rating, the volatility of earnings and cash flow, financial flexibility, the transaction costs and fees for issuing debt, the potential costs of bankruptcy, near-bankruptcy financial distress, the tax advantage of interest deductability, the debt levels of other firms in the industry and the personal tax cost that investors face when they reserve interest income. In addition, the study discovers that banks prefer to fund their operation through the mix source.

The study equally reveals the factors affecting bank's choice between short and long-term debt. In the order of importance, they are matching the maturity of debt with the life of assets, issuing short-term debt when waiting for long-term market interest rates to decline, short-term borrowing to prevent the bank from undertaking risky projects, and short-term borrowing to capture returns from new projects. From the study, the factors responsible for making equity issues in their order of importance are funding a major expansion, making acquisition, and leverage reduction if market conditions are right. Moreover, most banks make debt issue when the need arises, some monthly, others quarterly, biannually and yearly.

Finally, the study discovers that the following elements influence the bank's capital structure in this order of importance: ownership structure and management control, growth opportunity, profitability, size of the firm, uniqueness of the firm and its reputation, risk and cost of financial distress, earnings per share, tangibility, tax economies associated with debt financing and issuing cost.

In the light of these findings, banks should adopt the mix source of financing, that is, both internal and external source. The internal source should be retained earnings while equity should be the external source. The factors determining capital structure of banks in Nigeria are widely known to be both endogenous and exogenous. Given the pivotal roles that banks play in the nation's economy, it is expected that banks should choose and adjust their strategic mix of securities to maximize the value of the firm. This ensures that banks keep a balance with respect to optimal capital structure.

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THE EFFECT OF INTERNAL MIGRATION ON THE COLOMBIAN LABOR MARKET

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ABSTRACT

Internal migration in Colombia has led to demographic transformation. These migratory movements have been greatly influenced by "available" employment opportunities in different urban areas and by increased internal armed conflict. The effect of migratory flows on the probability of finding a job and income from work in Colombia's ten main urban areas from 2001-2005 were estimated using Logit analysis and Heckman's selection bias correction model. Evidence shows that age had a positive but decreasing incidence on the probability of being employed. Individuals with a higher level of education, male, married or cohabiting, and households with more employed members, had a greater probability of being employed. Elasticity of worked hours to produce income increased up to 2002 then decreased. Evidence also suggests that return to education is lower for migrants and forcibly-displaced population people. Moreover, the study shows that forcibly-displaced workers earn the lowest wages and face the lowest probability of finding a job.

INTRODUCTION

Internal migration in Colombia has led to demographic transformation totally different from other Latin America countries because the internal process of migration has been directed to a few urban centers and not just one main city. Such migratory movements have been mainly influenced by "available" employment opportunities in different urban areas and increased armed conflicts. Nevertheless, migrant population is mainly comprised of unskilled labor and as such is forced to seek low paying jobs in the informal sector.

Despite the increasing importance of migratory flows for the Colombian labor market, no instruments of economic planning that model mobility trends have been developed yet. This paper aims to study and measure the incidence of migratory flows to the labor markets of Colombia's ten main urban areas from 2001 to 2005. The following urban areas were analyzed: Barranquilla, Bogotá, Bucaramanga, Manizales, Medellín, Cali, Pasto, Pereira, Ibagué and Monteria. Three groups of migrants are examined in this paper: Recent migrants are those that have migrated within the last five years. Long-term migrants are those that have migrated more than five years earlier. According to the nature of their migration decision, we classify migrants between forced and voluntary ones. The database was collected from the Ongoing Household Survey (*Encuesta Continua de Hogares*) conducted by the Colombian Statistics' Administration Department (*Departamento Administrativo Nacional de Estadística* - DANE).

Logit analysis was used to predict the probability of finding a job based on the classification of migrant population. Some determinants of individuals' income were considered using Heckman's selection bias correction model. It was found that age had a positive but decreasing incidence on the probability of finding a job and earning a higher wage. Individuals having a higher level of education, male, married or cohabiting and households with more employed members had a higher probability of finding a job.
Elasticity of worked hours to produce income increased up to 2002, and then decreased. Recent labor reforms that reduced the cost of overnight working hours may have contributed to this change.

Evidence also suggested that return to education was lower for migrants and within them forcibly-displaced individuals had the lowest wages and the lowest probability of finding a job.

LITERATURE

There are essentially two economic models which try to explain the economic impact of labor migration: the neoclassical and the new economics of labor migration. Under the macro theory of neoclassical economics, scholars argue that migration is caused by differences in the supply of and demand for labor in sending and receiving countries and/or regions (Harris and Todaro, 1970). It is also argued under this theory that migratory decisions are made by individuals after a cost-benefit analysis and when the individual perceives that he or she will have a positive net return from migration (Todaro, 1969). That is, voluntary migration is analyzed as an investment decision. Individuals will migrate and face social and moving costs if they perceive a higher monetary retribution at the destination city/region.

On the other hand, new economics of migration argues households or families make migration decisions as a group and they seek to maximize income and minimize risks resulting from market failures in unstable economies to improve their income relative to the rest of the community (Stark 1991). Under this theory, risk aversion is considered the main reason for rural-urban migration; specifically, if it diversifies risk to one's income.

Other international studies have concluded that internal migration works as an adjustment mechanism for inter-regional labor markets, see for the United States (Blanchard & Katz, 1992); Europe, the USA and Canada (Obstfeld & Peri, 1998); Spain, Europe and the USA (Mauro, Prasad & Spilimbergo, 1999); Australia (Debelle & Vickery, 1999); Italy (Bosco, 1999) and the Czech Republic and Slovakia (Firdmuc, 2004).

Other studies focusing on internal migration in Colombia have found changes in migratory patterns. These studies referred to urbanization and the migratory phenomenon as the answer to observed disparity in development levels among regions, see Adams (1969), Schultz (1971), Simmons & Cardona (1972), Martine (1975), Fields (1979), Fields (1982), Rosenzweig & Wolpin (1988) and Shefer & Steinvortz (1993). Current studies analyze violence as the key factor in forced displacement and the social costs associated with this process. Pécaut (2000), Kirchhoff & Ibáñez (2001), Meertens & Stoler (2001), Galvis (2002), Flórez (2003), Ibáñez & Vélez (2003), Ibáñez (2004), Ibáñez & Querubín (2004) and Neira (2004) are among these studies.

METHODOLOGY

This study seeks to measure the impact of internal migration on wages and employment conditions in 10 of the largest Colombia's cities. The database was taken from the Continuous Survey of Households (*Encuesta Continua de Hogares*). Thus, Logit analysis was used to predict the likelihood that an individual would be employed and Heckman's selection model was used to analyze the factors affecting an individual's wage. Only economically active population, employed and unemployed people, were considered for the Logit analysis.

For the Logit analysis, it is assumed that the probability that an individual changes states follows a logit distribution and this probability is a function of a set of the environment and individual's characteristics. Individuals could be in one of two status, employed or unemployed. The expectation that an individual i has a job $\left(y_i^*\right)$ is a linear function of such individual's selected variables $\left(z_i\right)$ and a random component not observed $\left(\varepsilon_i\right)$. The equation can thus be stated as:

$$y_i^* = \boldsymbol{\alpha}'\mathbf{z_i} + \varepsilon_i \tag{1}$$

And y_i^* can take a value of 1 or 0:

$$\begin{aligned} y_i &= 1 \quad \text{if an individual } i \text{ is employed} \\ y_i &= 0 \quad \text{if an individual } i \text{ is not employed but is seeking employment.} \end{aligned} \tag{2}$$

Thus, the probability that an individual i be employed $\left(p_O\right)$ is:

$$\begin{aligned} p_O = \quad prob\left(y_i = 1\right) &= prob\left(y_i^* > 0\right) = prob\left(\boldsymbol{\alpha}'\mathbf{z_i} + \varepsilon_i > 0\right) \\ &= prob\left(\varepsilon_i > -\boldsymbol{\alpha}'\mathbf{z_i}\right) = 1 - F\left(-\boldsymbol{\alpha}'\mathbf{z_i}\right) \end{aligned} \tag{3}$$

Where F is the cumulative distribution of ε_i. If one assumed F to be a functional form, the Logit model can be stated as:

$$F(-\boldsymbol{\alpha}'\mathbf{z_i}) = \frac{e^{-\boldsymbol{\alpha}'\mathbf{z_i}}}{1+e^{-\boldsymbol{\alpha}'\mathbf{z_i}}} = \frac{1}{1+e^{\boldsymbol{\alpha}'\mathbf{z_i}}} \tag{4}$$

And the probability of finding a job as:

$$p_O = \frac{e^{\boldsymbol{\alpha}'\mathbf{z_i}}}{1+e^{\boldsymbol{\alpha}'\mathbf{z_i}}} \tag{5}$$

The probability that an individual will be employed is a linear function of $\left(z_i\right)$, those are a set of variables like age (Age), age to the second power (Age^2), educational level (Level), gender (Gender), number of employed people in the same household (Nemploy), migration term (Migre=1 for recent migrant or Migre=0 for long term migrant or native) and cause of migration (Displcf=1 for forced displaced or Displcf=0 for economic migrant), and marital status (Couple=1 for married or cohabiting). This model is used to approximate a migrant's probability of finding a job given a set of determined variables. In order to determine the most suitable model for this analysis, the Likelihood ratio statistic (LR statistic), the Wald test and pseudo R^2 were used.

Next, income determinants were estimated by following Mincer's model (including the recent migration variable and correcting income selection bias with Heckman's maximum likelihood method) to analyze individuals' participation in the labor market and earnings. Following this model, the log of monthly earnings (Ltotwage) was taken as dependent variable. The years of education (Yedu), potential experience (Experience) and potential experience to the second power ($Experience^2$), the log of total worked hours in a month (Lhoursl) and the individuals who had recently migrated (Migre) or had been forced displaced (Displcf) were also considered. It should be emphasized that unitarian elasticity restriction on earnings was not imposed on total worked hours (as originally imposed by Mincer (1974)), so the log of total worked hours in a month was considered as explanatory variable. The objective equations considering the time and reason for migrating were respectively:

Ltotwage = f (Yedu, Experience, $Experience^2$, Lhoursk, Migre)

Ltotwage = f (Yedu, Experience, Experience^2, Lhoursk, Displcf)

The dependent variable was also considered unobservable. Thus, the dependent variable for *j–th* observation was observed if the selection equation:

$$z_j\gamma + u_{2j} > 0 \qquad (6)$$

where

$$u_1 \sim N(0,\sigma) \qquad (7)$$
$$u_2 \sim N(0,1)$$
$$corr(u_1,u_2) = \rho$$

Age (Age), age to the second power (Age^2), head of family (Head=1, otherwise=0), marital status (married or cohabiting=1, otherwise=0), gender (Gender=1 for male or Gender=0 for female), and the number of single male employed individuals (Childrenxo) were considered in selection equation (6).

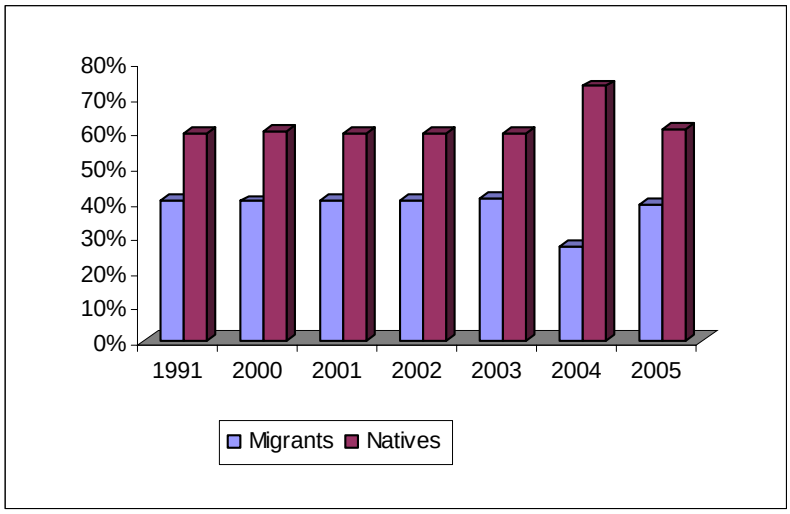
When $\rho \neq 0$, the standard regression applied to equation (7) produced biased outcomes, due to the bias selection in reservation wages are different through the individuals and this situation could be not considered inside this equation. Heckman's model estimated by maximum likelihood offered estimators where were consistent and asymptotically efficient for all parameters correcting the selection bias.

EMPIRICAL EVIDENCE

Migration Summary Statistics

Migratory flows from 1991-2005 in Colombia towards ten urban areas represented approximately 40% of the population (Figure 1). Recent migrants represented about 14% of the total migrant population.

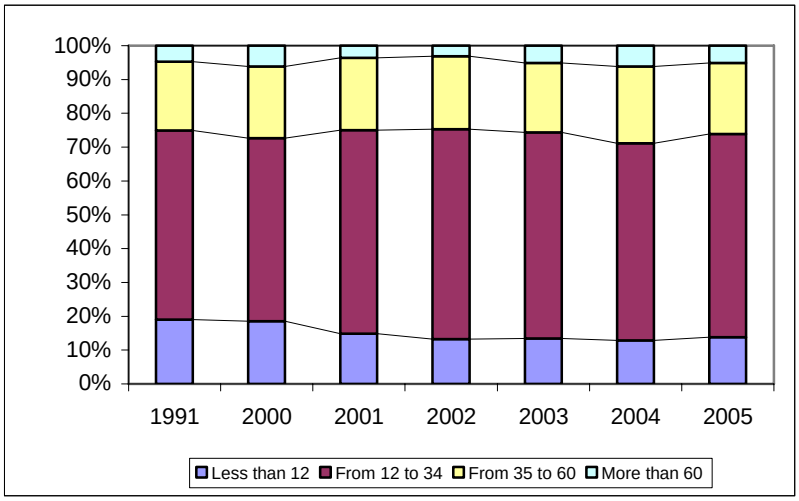
Figure 1: Relative Percentage of Migrant and Native Population Living in Ten Colombian Urban Areas (1991-2005)



Source: DANE, authors' calculations.

Within new migrants, younger population, ages 12 to 34, move more towards the main urban areas (Figure 2). This phenomenon has caused higher participation and unemployment rates in the receiving ten larger cities.

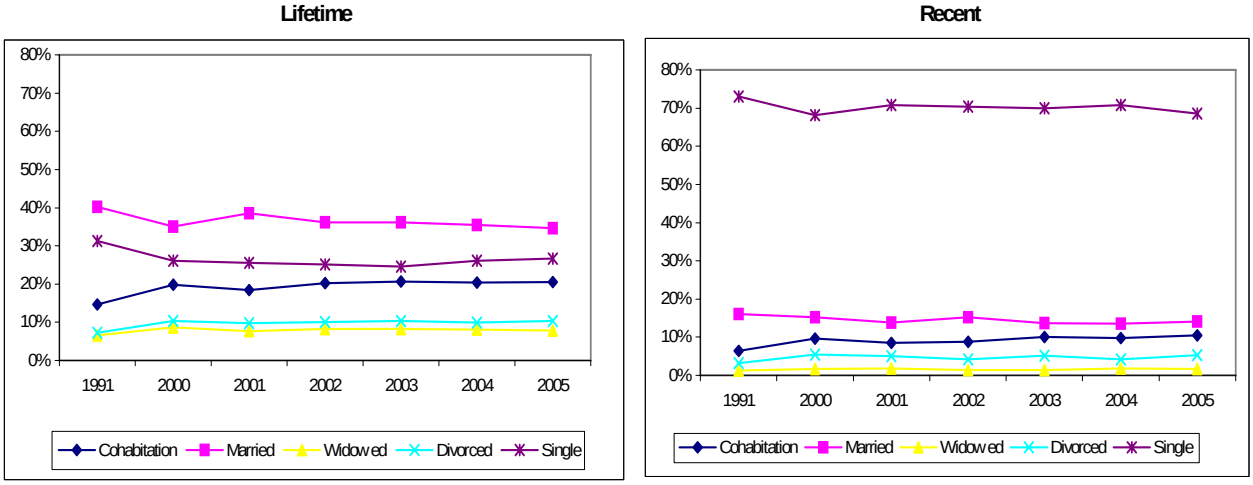
Figure 2: Recent Migration Towards Ten Colombian Urban Areas by Age Group (1991-2005)



Source: DANE, authors' calculations.

According to Figure 3, recent migrants are mostly composed by single people. Perhaps one of the consequences of long term migration was to settle down and start a family, as the share of single people is much lower than the one of married people.

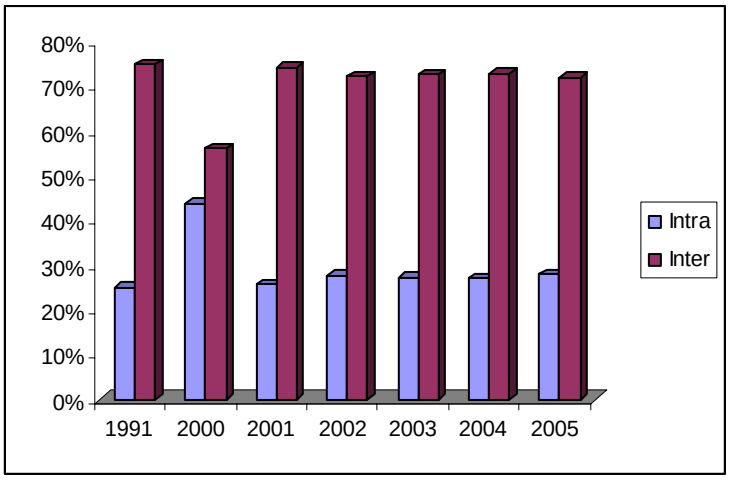
Figure 3: Lifetime Migrants and Recent Migrants in Ten Colombian Urban Areas by Marital Status (1991-2005)



Source: DANE, authors' calculations.

The evidence also shows that migrating distance has increased over time. However, this variable must be analyzed with care due to the geographical differences in Colombian departments' sizes and topography. Inter-departmental migrants represented 72.07% of all migrants for March 2005, whereas intra-departmental migrants represented only 27.93% (Figure 4).

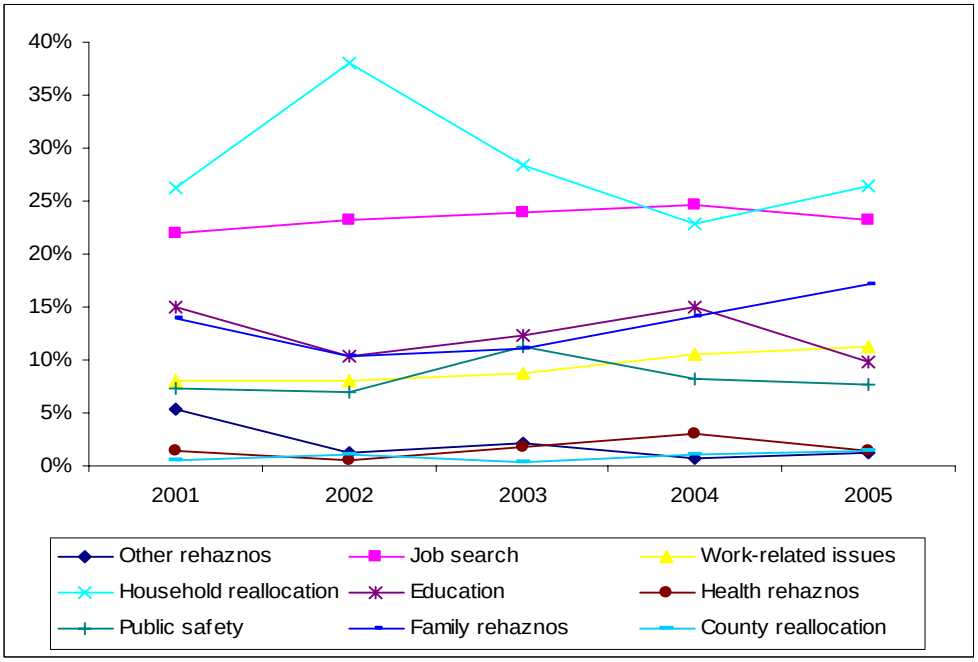
Figure 4: Relative Percentage of Intra-departmental and Inter-departmental Migrant Population in Ten Colombian Urban Areas (1991-2005)



Source: DANE, authors' calculations.

For the past few years, job search and home transfer have been among the main reasons for migration in Colombia. Motives concerning family, work-related issues and public safety have also influenced migratory movements (Figure 5).

Figure 5: Migrant Population Distribution by Reasons for Migrating in Ten Colombian Urban Areas (1991-2005)



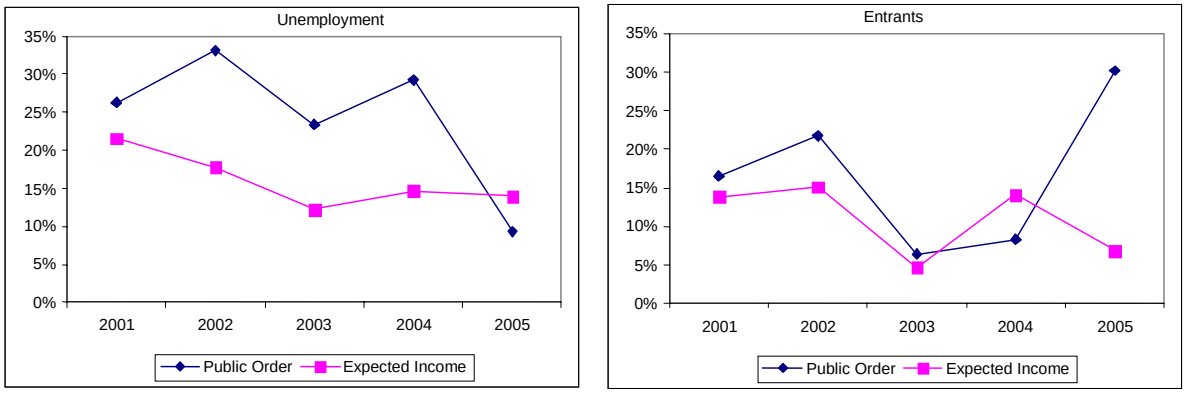
Source: DANE, authors' calculations.

The share of the migrant population who argues economic reasons to migrate provides empirical evidence which supports the neoclassical and new economics of migration theories, evidence also suggests that a

proportion of the population has migrated for economic reasons (2001-2005). These migration patterns have been used to analyze the migrant profile and the degree of misalignment in labor markets.

Individuals who moved short distances due to economic motivations had a lower economic position than those who migrated longer distances. Within this population, single people migrated more often, probably because they had more freedom (no family to support, no families to reallocated, no school reallocation etc.) to look for employment opportunities. First time job seekers were also predisposed to migrate longer distances. The forcibly-displaced population had higher unemployment rates than economic migrants, which is coherent with the expected economic outcomes of the unexpected, not planned migration decision that those migrants had to take (Figure 6).

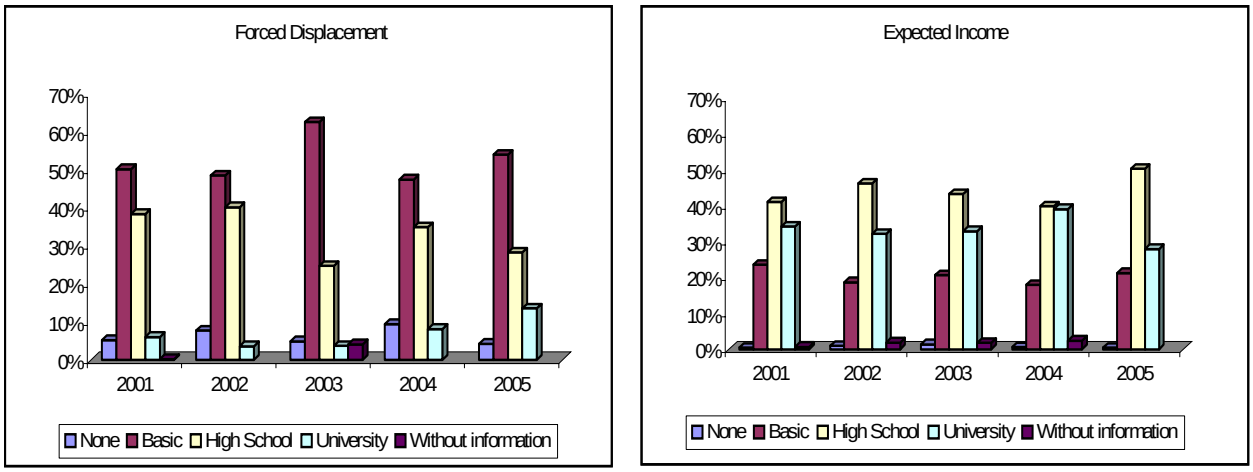
Figure 6: Unemployment Rates and Entrants for Economic Migrants and Forcibly-displaced in Colombia (1991-2005)



Source: DANE, authors' calculations.

Within the displaced population by gender, women migrating due to forced displacement increased throughout the sample period. They also migrated longer distances. The forcibly-displaced had lower schooling levels (Figure 7).

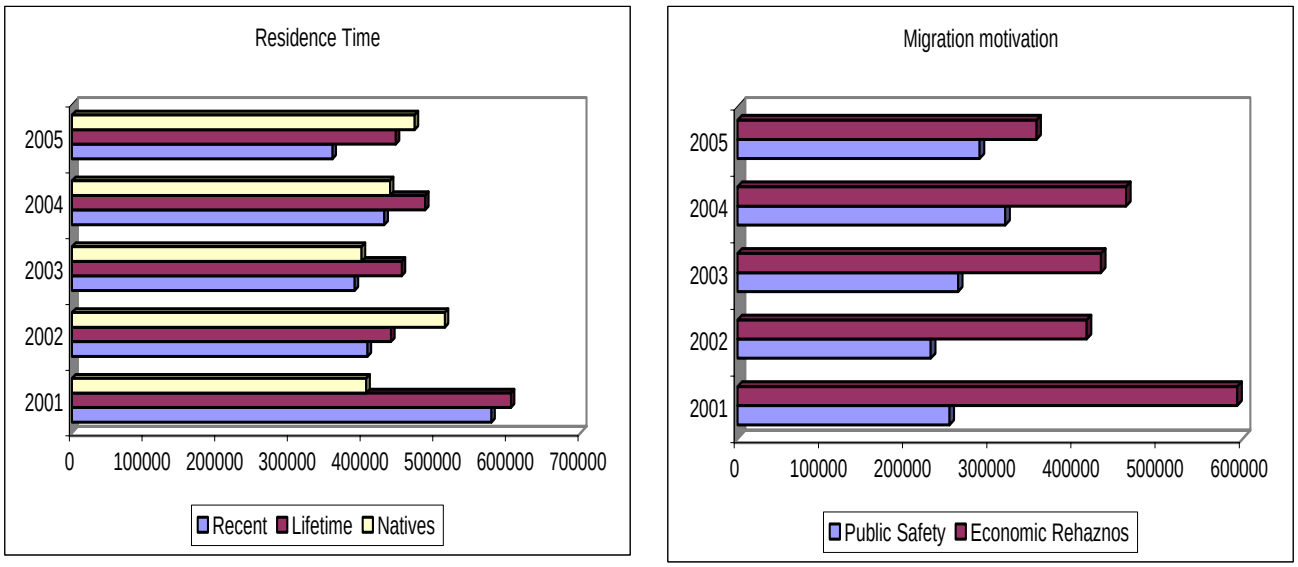
Figure 7: Educational Level of Economic Migrants and the Forcibly-displaced in Colombia (1991-2005) (in Terms of Years of Schooling)



Source: DANE, authors' calculations.

Once relocated, with the exception of the displaced due to violence, there are no significant evidence of different wages for natives or migrants (Figure 8).

Figure 8: Migrants' Wages According to Length of Residence and Reason for Migration in Colombia (1991-2005)



Source: DANE, authors' calculations (constant prices for 1998).

EMPIRICAL RESULTS

The model for estimating the probability of having work in Colombia's ten main urban areas 2001–2005 is presented in Table 1. The explain variables in this case are: Age, Age to the second power (Age^2), Schooling (level), Migrant term status (Migre), Gender (Gender), marital status (Couple), and number of employed per household (Nemploy).

The results show that age had a positive yet decreasing effect on the probability of finding a job. People with higher educational levels, married or cohabiting, households with additional working members, male and recent migrants had a greater probability of finding work. It should be emphasized that the incidence of schooling and gender on wages in Colombia is consistent with previous studies. Previous studies have recognized the importance of having skills and schooling. Accumulated human capital thus has an important effect on people's productivity, wages and welfare (Castellar & Uribe, 2001). Nevertheless, the return to education is usually greater for men than women (Arias & Chavez, 2002). Statistical tests demonstrate that the model had explanatory power. The likelihood ratio (LR) test and Wald values demonstrated that the coefficients were significantly different than zero just as pseudo–R^2 showed how well the model explained the information. Moreover, the estimated model had a high prediction level (more than 66% for all cases). The marginal effects of age were also estimated, considering the average years of education, number of people employed in a household and whether the individuals were married or cohabiting. Marginal changes in the probability of finding a job by gender or by migratory characteristics did not become evident with age changes.

The model for estimating the probability of finding work in Colombia's ten main urban areas (2001–2005) (Table 2) was re-estimated only with economic migrants and the forcibly-displaced population (Displacf). Forcibly-displaced people had a lower probability of finding a job. All the values considered

showed that the model had explanatory and predictable power (higher than 70% for all cases). The marginal effect of age was also estimated. It was found that age had a greater marginal effect on the probability of finding a job for the displaced population. Displaced population' early introduction to the labor market may explain this last result.

Table 1: The Probability of an Individual Finding Work in Ten Colombian Urban Areas (2001–2005)

Variables	**Estimated coefficients (p-value)**				
	2001	**2002**	**2003**	**2004**	**2005**
Constant	-4.7578* (0.0000)	-4.7227* (0.0000)	-4.8050* (0.0000)	-3.5931* (0.0000)	-2.3672* (0.0000)
Age	0.1769* (0.0000)	0.1741* (0.0000)	0.1769* (0.0000)	0.1228* (0.0000)	0.1256* (0.0000)
Age^2	-0.0016* (0.0000)	-0.0016* (0.0000)	-0.0016* (0.0000)	-0.0011* (0.0000)	-0.0011* (0.0000)
Level	0.0001 (0.9700)	0.0059* (0.0050)	0.0059* (0.0060)	0.0043** (0.0410)	0.0038*** (0.0840)
Migre	0.1935* (0.0000)	0.2184* (0.0000)	0.2201* (0.0000)	0.0821 (0.1090)	0.0751 (0.1710)
Gender	0.4915* (0.0000)	0.4781* (0.0000)	0.5102* (0.0000)	0.4713* (0.0000)	0.3655* (0.0000)
Couple	0.3054* (0.0000)	0.3109* (0.0000)	0.2863* (0.0000)	0.3195* (0.0000)	0.3095* (0.0020)
Nemploy	1.0344* (0.0000)	1.0007* (0.0000)	1.0431* (0.0000)	0.3280* (0.0000)	0.2381* (0.0000)

* Significant at 1% ** Significant at 5% *** Significant at 10%

Table 2: The Probability of Economic Migrants and the Forcibly-displaced Population Finding Work in Ten Colombian Urban Areas (2001-2005)

Variables	**Estimated coefficients (p-value)**				
	2001	**2002**	**2003**	**2004**	**2005**
Constant	-3.0925* (0.0000)	-3.0179* (0.0000)	-2.7844* (0.0000)	-2.9915* (0.0000)	-3.7769* (0.0000)
Age	0.1489* (0.0000)	0.0958* (0.0000)	0.0774* (0.0080)	0.1049* (0.0010)	0.1711* (0.0000)
Age^2	-0.0018* (0.0000)	-0.0011* (0.0000)	-0.0008** (0.0350)	-0.0012* (0.0040)	-0.0020* (0.0000)
Level	-0.0145 (0.1350)	-0.0124* (0.0000)	-0.0002 (0.9860)	-0.0025 (0.7890)	-0.0198*** (0.0760)
Gender	0.5234* (0.0020)	0.6084* (0.0000)	0.5479* (0.0010)	0.1989 (0.1960)	0.4357** (0.0140)
Couple	-0.3722** (0.0220)	-0.1217** (0.0300)	0.0551 (0.7360)	0.0173 (0.9090)	-0.5581* (0.0030)
Nemploy	2.5193* (0.0000)	3.4302* (0.0000)	3.2759* (0.0000)	2.8316* (0.0000)	3.2596* (0.0000)
Displcf	-2.3133* (0.0000)	-1.9400* (0.0000)	-1.9798* (0.0000)	-1.8176* (0.0000)	-1.2338* (0.0000)

* Significant at 1% ** Significant at 5% *** Significant at 10%

Table 3 presents the estimates for some income (Ltotwage) determinants in the ten main Colombian cities 2001–2005. The independent variables considered were schooling (Yedu), experience (Experience), Squared of experience ($Experience^2$), hours worked (Lhoursl) and the migrant term status (migre) (less than five year since migration is considered a recent migration). The selection equation considered age

(Age), Age to the second power (age^2), the number of single children for each individual having a job (Childrenxo), and dummy variables for head of household (head), marital status (couple) and gender.

Using Heckman's method correction selection bias, it was found that the return to education was between 6% and 9%. This estimation also showed the positive but decreasing effect of work experience on income (with the exception of 2002). Such a relationship decreased during the covered period. Elasticity of worked hours to income increased until 2002 and then decreased. Such result was consistent with Colombian labor reform as extra night-time hours were reduced.

As noted earlier, under the macro theory of neoclassical economics, scholars argue that migration is caused by differences in the supply of and demand for labor in sending and receiving countries and/or regions (Harris and Todaro, 1970). It is also argued under this theory that migratory decision are made by individuals after a cost-benefit analysis and when the individual perceives that he or she will have a positive net return from migration. Being a recent migrant had a positive relationship with wage level. This result is consistent with the theory of neoclassical economics where individual migratory decision is based on a cost-benefit analysis. Thus, most recent migrants expected to obtain higher incomes in their target or receiving city.

Table 3: Some Determinants of Income for Individuals in Ten Colombian Urban Areas (2001–2005)

	2001	**2002**	**2003**	**2004**	**2005**
Ltotwage					
Yedu	0.085701* (0.0000)	0.060044* (0.0000)	0.087726* (0.0000)	0.084535* (0.0000)	0.083520* (0.0000)
Experience	0.034324* (0.0000)	-0.023940* (0.0000)	0.031629* (0.0000)	0.031990* (0.0000)	0.029082* (0.0000)
$Experience^2$	-0.000312* (0.0000)	-0.000606* (0.0000)	-0.000188* (0.0000)	-0.000240* (0.0000)	-0.000158* (0.0000)
Lhoursl	0.607823* (0.0000)	1.761563* (0.0000)	0.750097* (0.0000)	0.679969* (0.0000)	0.694719* (0.0000)
Migre	0.170371* (0.0000)	0.112294 (0.2570)	0.109554* (0.0000)	0.145221* (0.0000)	0.114743* (0.0000)
Constant	8.580908* (0.0000)	1.646389* (0.0000)	8.059344* (0.0000)	8.349310* (0.0000)	8.367825* (0.0000)
Select					
Age	0.048202* (0.0000)	0.058472* (0.0000)	0.059352* (0.0000)	0.049575* (0.0000)	0.0637134* (0.0000)
Age^2	-0.000771* (0.0000)	-0.000779* (0.0000)	-0.000948* (0.0000)	-0.000828* (0.0000)	-0.001004* (0.0000)
Couple	-0.180302* (0.0000)	-0.015499 (0.3990)	-0.070653* (0.0000)	-0.054534* (0.0020)	-0.078445* (0.0000)
Head	0.276232* (0.0000)	0.344201* (0.0000)	0.336966* (0.0000)	0.303561* (0.0000)	0.266490* (0.0000)
Gender	-0.061297* (0.0020)	0.093955* (0.0000)	-0.031444 (0.6810)	-0.023387 (0.1760)	-0.011071* (0.0000)
Childrenxo	-0.587124* (0.0000)	-0.319991* (0.0000)	-0.222115* (0.0000)	-0.170637* (0.0000)	-0.172990* (0.0000)
Constant	0.900427* (0.0000)	0.464591* (0.0000)	0.221928* (0.0010)	0.190535* (0.0040)	0.003432* (0.0000)

* Significant at 1% ** Significant at 5% *** Significant at 10%

Table 4 presents some determinants of income for economic migrants and forcibly-displaced people (Displcf) from 2001–2005. Using Heckman method for bias correction, return on education decreased from 7.23% to 6.29% for economic migrants and forcibly-displaced people. The forcibly-displaced population earned the lowest wages.

Table 4: Some Determinants of Income for Economic Migrants and Forcibly-displaced People in Ten Colombian Urban Areas (2001–2005)

	2001	2002	2003	2004	2005
Ltotwage					
Yedu	0.072307 * (0.0000)	0.043533** (0.0200)	0.081917 * (0.0000)	0.073479* (0.0000)	0.062983* (0.0000)
Experience	0.026777 * (0.0000)	-0.047265** (0.0110)	0.038665 * (0.0000)	0.035125 * (0.0000)	0.026328* (0.0000)
Experience^2	-0.000216** (0.0320)	-0.000269 (0.5520)	-0.000395* (0.0020)	-0.000441* (0.0000)	-0.000258 (0.0030)
Lhoursl	0.322045* (0.0000)	1.178669* (0.0000)	0.567996 * (0.0000)	0.520213 (0.3700)	0.601091* (0.0000)
Displcf	-0.149482** (0.0340)	-1.474875* (0.0000)	-0.202769* (0.0050)	-0.136197* (0.0000)	-0.225647* (0.0000)
Constant	10.216490* (0.0000)	5.318187* (0.0000)	9.013098* (0.0000)	9.312580* (0.0000)	9.187710* (0.0000)
Select					
Age	0.041343** (0.0330)	0.0125358 (0.4670)	-0.025876 (0.1440)	0.002656 (0.8960)	0.066862* (0.0000)
Age^2	-0.000806* (0.0020)	-0.0003615 (0.1120)	0.000094 (0.6930)	-0.000367 (0.1850)	-0.001056* (0.0000)
Couple	-0.345296* (0.0000)	0.2294569 (0.4870)	-0.034074 (0.6910)	-0.131030 (0.1300)	-0.407488* (0.0000)
Head	0.549678* (0.0000)	0.4187526* (0.0000)	0.378442* (0.0000)	0.487593* (0.0000)	0.448952* (0.0000)
Gender	-0.241634* (0.0070)	-0.6365688 (0.4440)	-0.271569* (0.0010)	-0.231625* (0.0040)	-0.071763 (0.3960)
Childrenxo	-0.200428* (0.0000)	-0.595643* (0.0000)	-0.259420* (0.0000)	-0.180072* (0.0000)	-0.205574* (0.0000)
Constant	0.0514504* (0.0020)	0.973138* (0.0000)	2.202317* (0.0000)	1.523053* (0.0000)	0.548720*** (0.0730)

* Significant at 1% ** Significant at 5% *** Significant at 10%

CONCLUDING REMARKS

Migration has become a relevant demographic transformation phenomenon in Colombia. For the last three decades, migrants have represented 40% of the total population. The rates of working age population and unemployment rates in urban areas have increased. The evidence indicates those individuals with a higher educational level, married or cohabiting, and households with multiple employed members had greater possibilities of finding a paying job. The elasticity of hours worked to income increased until 2002 and then decreased, probably due to the reduction in extra night hours.

Return to education is lower for migrants and forcibly-displaced people earned the lowest wages and faced the lowest probability of finding a job. This paper argues that migrants cannot improve their quality of life due to labor market rigidity and the absence of labor legislation conducive to social networks for migrants.

Future research on formal and informal employment and factors that attract and expels migrants are needed. Other methodologies for studying the effect of internal migration on the labor market should also be considered.

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THE FINANCIAL SERVICES AUTHORITY: A MODEL OF IMPROVED ACCOUNTABILITY?

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ABSTRACT

Prior to the adoption of the FSA (Financial Services Authority) model, supervision of UK banks was carried out by the Bank of England. Although the Bank of England's informal involvement in bank supervision dates back to the mid nineteenth century, it was only in 1979 that it acquired formal powers to grant or refuse authorization to carry out banking business in the UK. Events such as the Secondary Banking Crisis of 1973-74 and the Banking Coordination Directive of 1977 resulted in legislative changes in the form of the Banking Act 1979. Bank failures through the following years then resulted in changes to the legislative framework. This article looks into the claim that the FSA model has improved in terms of accountability in comparison to its predecessor, the Bank of England. It considers the impact the FSA has made on the financial services sector and on certain legislation since its introduction. Through a comparison with the Bank of England, previous and present legislation, reports and other sources, an assessment is made as to whether the FSA provides more accountability. Evidence provided here supports the conclusion that the FSA is both equipped with better accountability mechanisms and executes its functions in a more accountable way than its predecessor.

INTRODUCTION

This article investigates whether improvements have been made by the Bank of England's successor, the Financial Services Authority – hereinafter referred to as the FSA. Part of the problems encountered by the Bank of England's regime was related to the Financial Services Act 1986. Through an analysis of the legislation operating during the Bank of England and FSA's regimes, an assessment will be made as to whether accountability has been improved within the financial services sector. An analysis of both regulators' approaches to supervision and their regulatory framework is made to ascertain whether these elements have aided accountability. Segregation of duties and clear delineation of responsibilities and duties are found to be crucial to aiding accountability. Regulatory and supervisory responsibilities were formally passed to the FSA in June 1998 under the Bank of England Act 1998. During this announcement, monetary policy independence was given to the Bank of England. However this was followed by another announcement on 20 May 1997 in which transfer of banking supervision from the Bank of England to the FSA, formerly known as the SIB, was made (See Statement by Chancellor of Exchequer, 6 May 1997)

Until the early 1970s, the Bank of England's ability to gather information was limited to the collection of monetary statistics and the informal monitoring of banking institutions (Hadjiemmanuil, 1995). The intensity of monitoring depended on the type of relationship an institution had with the Bank of England; more attention was given to discount houses and accepting houses (Hadjiemmanuil, 1995). During the Secondary Banking Crisis in 1973, UK bank supervision was managed by a group which consisted of 15 people. A personal approach to supervision was in existence at that time. However, following the Secondary Banking Crisis, a new Banking Supervision Division was established with the number of staff rising to 70 over three years. Thus the "personal approach" stance to supervision was reduced.

The Banking Act 1979 section 16 gave to the Bank of England "The Bank" power to compel "licensed deposit-takers", the lower tier of institutions authorized under the statute, to disclose any information that might be requested of them or to produce reports on such information by an accountant authorized by the Bank. The Bank was also given powers to appoint investigators who were to examine the affairs of an

authorized institution. There was no attempt to depart from established cooperative supervisory practices of the Bank and the Bank's flexible, personal, progressive (tiered) and participative "supervisory style" was maintained despite the fact that under new licensing requirements, large numbers of previously unregulated institutions had been brought for the first time under the Bank's responsibility (Hadjiemmanuil, 1995: p 144). Following the collapse of Johnson Matthey Bankers in 1984, the Leigh Pemberton Committee was set up to review banking supervisory arrangements. The "tiered" approach was abandoned and the Bank's power to request information was extended to cover all banks in a move aimed at improving supervision (Hadjiemmanuil, 1995: p 144). There was also increased emphasis on the requirement by authorized institutions to maintain sufficient internal controls and the establishment of audit committees consisting of non-executive directors. A system of occasional on-site examinations was introduced where small review teams of supervisors along with accountants or bankers on temporary assignment from their firms to the Bank, visited usually for a period of a few days the authorized institutions for the purpose of assessing the quality of their lending and control systems or examining particular areas of concern (Banking Act of 1987).

Following the collapse of Johnson Matthey Bankers, the resulting legislation paved way for the establishment of a Board of Banking Supervision in May 1986 to assist the Governor of the Bank of England. The Board consisted of nine members, three of which were *ex officio* members, the Governor, Deputy Governor and Head of Supervision. Six outsiders provided expertise in the areas of banking, accountancy and law. The effectiveness of the Board of Banking Supervision was questioned after the Bingham Report (Inquiry into the Supervision of the Bank of Credit and Commerce International) observed that the Board lacked vital information to perform its duties. Following this incident, the level and detail of information received by the Board was increased. The Board met more frequently and was more involved in every aspect of the Bank's regulatory work.

The Banking Act 1987 vested in the Bank wide powers relating to the collection of information and the monitoring of authorized institutions. Schedule 3 of the Act covers the minimum criteria for authorization of an institution as a bank and provided foundation for the Bank of England's supervisory position. Apart from vesting in the Bank wide powers relating to the collection of information and monitoring of authorized institutions, the Banking Act of 1987 introduced the involvement of bank auditors in the supervisory process. The collapse of BCCI also led to the adoption of a more intrusive supervisory attitude (Hadjiemmanuil, 1995: p 146). The number of on-site bank examinations increased to about 120 to 130 visits per year in 1995 (Hadjiemmanuil, 1995: p. 146). However, supervision remained largely dependent on information received from the authorized institutions themselves and the introduction of bank examinations on a quasi-permanent basis, as is the case in the US supervisory system was strongly resisted. The BCCI crisis also brought further change within the organizational structure of the Bank led to two new divisions within the Bank: that for Monetary Stability and that for Financial Stability. The decision-making process within the Bank was hierarchical - with the junior supervisors being entrusted with day-to-day monitoring of authorized institutions and not being authorized to take corrective action where it appeared to them appropriate (HR Vieten, 1997: p. 140). A critical decision was taken only after full consideration of circumstances of the case and at a higher level by senior regulators – subject to the Governor's approval. The collapse of Barings Bank in 1995 highlighted the fact that no on-site visits had ever been undertaken and that two had been planned for that year. The style of supervision by the Bank was one still based on trust in the "blue blooded banks" that did not require supervision (Treasury and Civil Service Committee, 1995).

The remaining sections of this paper are organized as follows: In the following section, regulation under the Bank of England regime is examined. This is followed by a section examining regulation under the Financial Services Authority regime. Next, a comparison of regulation under the two regimes is provided. Finally, the paper ends with some concluding comments and a discussion of the limitations of the paper.

REGULATION UNDER THE BANK OF ENGLAND

Polizatto distinguishes regulatory systems into two: moral suasion versus legalism and hands-off versus hands-on approaches (HR Vieten, 1997: p.73). Britain's system is more in line with the persuasive hands-off approach – even though as argued by Vieten (HR Vieten, 1997: p.73), British banking regulation is also governed by law. The system of supervision adopted by the Bank of England was one based on an informal regulatory approach which was based on influence and trust. A shared sense of hostility towards government bureaucracy and statutory rules in the City resulted in banks submitting to the Bank of England's and the trade associations' persuasive powers (Moran 1986 :18, Vieten 1997: pp73,74) . The Bank also maintained regular contacts with the main banking associations. As a result of the nature of the relationship between the Bank of England and the government – the Bank of England being a representative of City interests, the Bank of England had an informal relationship with the banks. This informal relationship would no doubt have provided the perfect situation whereby the Bank could have been "captured" by the industry it was supposed to have regulated.

According to Roberts (Hadjiemmanuil, 1995: p. 180), the internationalization of London and the growth of non-bank financial institutions in the 1960s started eroding the Bank's powers of moral suasion. Moran also states that the Bank's approach during the Secondary Banking Crisis was driven by fear of bureaucracy and placed excessive trust in regulatees at a period when internationalization and innovation proved unworkable for a regulatory system based on trust (HR Vieten, 1997: p. 75). In order to find a balance between the perceived benefits of the traditional system and the demands of an innovative market, the Bank introduced a two-tier system of recognition where the traditional system was reserved for the first tier and more intervention envisaged for tier two (HR Vieten, 1997: p. 75). This approach was deemed flexible as preservation of the Bank's informal approach suited and adapted well to the changing market (Cooke, 1986: p 89). However, with the enactment of the 1979 and 1987 banking acts, a trend towards growing formalization and reduction in the personal character of supervision was observed, staff number having risen from 15 to 249(Bank of England, 1994: p 36).

The collapse of banks such as Johnson Matthey Bankers (later rescued), BCCI and Barings, not only led to calls for change in the way in which prudential supervision was carried out but also to changes in the legislative framework. The collapse of Johnson Matthey Bankers caused immense damage on the reputation of the Bank of England and exposed its supervisory practices as complacent – injuring its relationship with major British banks (Johnson Matthey v Arthur Young, 1989). These banks were annoyed at having to bear the costs of the rescue (Hadjiemmanuil, 1995: p.43). Apart from the abolition of the two tier system which had been in operation at that time, weaknesses in the supervision of large exposures and the adequacy of control systems were identified. A recommendation was made for the introduction of statutory arrangements for the exchange of information between auditors and regulators. Calls were made for the introduction of a new Board of Banking Supervision – which was supposed to put the Bank under increased accountability. Other measures by Parliament included the strengthening of the Bank's powers to require information and to commence investigations into the affairs of authorized institutions. The release of bank auditors from their duty of confidentiality to client institutions to the extent necessary for facilitating the communication of information of regulatory evidence to the Bank, was also facilitated.

The most credible reason for keeping regulatory action secret was that confidence in a particular institution could be damaged if restrictive measures against it became known – which may lead to unreasonable termination (Trade and Industry Committee, 1989-1990: p. 49). Under the Banking Act 1987 section 17, the only piece of information that the Bank made available about banking institutions was whether they were authorized by the Banking Act. As well as hindering accountability, regulatory secrecy also undermines market transparency. If it were "reasonably certain" that a financial institution was beyond the stage where it could be rescued, then public should be aware of the impending risks

associated with such institutions. Such an institution should be disallowed from trading when it is obvious that it would only be wasting investors'funds. Detecting when to go public about such institutions' affairs and whether such affairs could be discovered on time is crucial. The collapse of BCCI resulted to the Bank of England being more willing to provide information about circumstances leading to the collapse and reduced to some extent the emphasis on confidentiality (Hadjiemmanuil, 1995: p 413). However despite the willingness of the Bank to publicize and explain its regulatory practices through speeches of its governors and directors, articles in the *Quarterly Bulletin* and appearances before parliamentary committees, the regulatory system then remained opaque to a large extent (Hadjiemmanuil, 1995: p 414). Existence of a statutory duty of regulatory confidentiality presented an impediment towards achieving greater accountability and transparency.

Following the Johnson Matthey affair, relations between the Bank and Treasury were damaged as the Chancellor had provided misleading information to Parliament in failing to mention a direct loan made to Johnson Matthey which went beyond the indemnity under discussion and of which the Chancellor himself was unaware (Hadjiemmanuil, 1995: p 414). After this incident, a solution was arrived at in which the Bank was always to consult the Treasury prior to committing financial resources to a rescue operation (Hadjiemmanuil, 1995: p 414). There also followed a more consistent approach to keeping the Treasury informed of impending problems – especially in situations where the failure or closure of an institution could have systemic implications or where a regulatory decision was likely to attract parliamentary questions (Hadjiemmanuil, 1995: p 414). Even though these arrangements did not improve the situation relating to accountability for the Bank's regulatory decisions (in particular since Treasury still declined responsibility to Parliament), the new arrangements improved the preparedness of the Treasury to face inconvenient questions (Hadjiemmanuil, 1995: p 407).

The duty of making reports improved transparency so far as the general policies underlying its regulatory decisions were explained in its pages. However, it had serious limitations as a means of increasing accountability to Parliament (Hadjiemmanuil, 1995: p 407). The figures published in the annual reports, as well as showing that the Bank actually refused authorization only to a small proportion of applicants, also showed that the powers of revocation and restriction were rarely used. "The Bank also does not give any indication of its activities relating to the informal preliminary vetting of institutions intending to apply for authorization"(Hadjiemmanuil, 1995: p 407). Investigations by Select Committees, and in particular the Treasury and Civil Service provided the only direct and possibly only effective means for parliamentary scrutiny of the Bank's regulatory activities (Hadjiemmanuil, 1995: p 408). Following the collapse of BCCI, the Treasury Committee was critical of the way the Bank had handled the matter and recommended a stricter supervisory approach (Treasury and Civil Service Committee, paras 61-89).

Shortcomings of the Bank of England which were also highlighted during the collapse of BCCI (Bank of Credit and Commerce, 1998) included the fact that the Bank had authorized BCCI as a licensed deposit-taker under the 1979 Act even though it did not know or understand the shareholding structure of the institution's group and as a result, could not confirm whether its controllers were fit and proper persons (Hadjiemmanuil, 1995: p 47). In addition, the Bank had not tried to stop BCCI from using a banking name even though it was aware that as a UK based second-tier institution, the institution was not entitled to do so. It was also highlighted that the Bank had not acted at all even though it had been aware of Luxembourg's inability to exercise effective supervision. BCCI's auditor Price Waterhouse was also blamed for failing to communicate fully to the Bank about the situation. After pressure from the US authorities, the Bank commissioned a report which led to the closure of BCCI. The recommendations in the report included (Bingham Report, 1992): The imposition on bank auditors of a statutory duty to report to the Bank all information they know or should reasonably know to be relevant to the exercise of its supervisory responsibilities under the Banking Act (Bingham Report, 1992, paras 3.43-3.45); the strengthening of communication systems within the Bank, to ensure that all critical information reached its senior officials (Bingham Report, 1992, paras 3.6); an increase in the Bank's responsiveness to

allegations of wrongdoing and the more active investigation of suspect banks (Bingham Report, 1992, paras 3.9-3.10) and a closer involvement of the Board of Banking Supervision in the supervisory process (Bingham Report, 1992, paras 3.11). However, even though it was acknowledged that there had been deficiencies in the BCCI case, none of the Bank's staff was held to account.

Following the collapse of Barings, neither the Board of Banking Supervision Report nor the Andersen Review of Supervision considered a total overhaul in the Bank's approach to supervision. The predominantly "off-site" nature of the supervision undertaken by the Bank was lauded by the Andersen Review as being flexible and able to influence banks by persuasion and not just the force of law or detailed rules (Treasury Committee, 1996: p. xiv). The Treasury Committee however noted that it was partly due to the discretionary basis of the Bank's approach to supervision that there was limitation in its ability to detect events at Barings and that some of the measures proposed in the Bank's review would help reduce the scope for flexibility (Treasury Committee, 1996: p. xiv). According to the Bank's Review of Supervision (Treasury Committee, 1996: para 14), the Arthur Andersen Review (supported by the Bank's Review of Supervision), suggests that the use of formal risk assessment models will mean there is need "to bring the line supervisors into direct contact, on site, with a wider range of management".

Even though the Bank committed itself to addressing the problems posed by evaluation of internal controls at banks and to addressing internal communication at the Bank itself by dedicating an increase in the resources towards supervision, it maintained a defense of retaining a non-rules based judgmental approach to supervision (Treasury Committee, 1996: p. xv). The Board of Banking Supervision Report identified a number of lessons arising from the collapse of Barings and a series of 17 recommendations for the Bank (Barings Bank, Session 1996-1997: p. xiii, 1996). Of the original 17 recommendations, 15 were reviewed in detail with the Board (Barings Bank, Minutes, 1996: p 147). Table 1 includes all 17 recommendations stated by the Board of Banking Supervision.

Would it have been difficult to change the culture which had existed between the Bank of England and the City for many decades? This would have required radical reform which may have proved difficult to implement at once. "Rome was not built in one day" and cultural change is always a great challenge. It was clearly vital to transfer banking supervision to an institution which did not have a cozy relationship with the City. The proximity of the Bank with the City was a key factor in the weakening of its regulatory capabilities.

The Bank of England's 1996 Annual Report identified three core purposes of the Bank namely: maintaining the integrity and value of the currency, maintaining the stability of the financial system, both domestically and internationally and seeking to ensure the effectiveness of the UK's financial services (Bank of England, 1996: p 8). The Annual Report also goes on to explain that "in exceptional circumstances, the Bank may also provide or organize last resort financial support where this is needed to avoid systemic damage." Since banks are expected to take risks, it would be expected that the Bank would not aim at eliminating all elements of risk within the financial system. From the report on the Barings collapse (Treasury Committee, 1996; p, x), it was highlighted that the Bank could not fulfill its main objective of protecting the financial system without some assessment of the internal workings of the firms in the market – which included the quality of their management. It was also highlighted that guarding against systemic risk was vital to maintaining the integrity of the financial system. Another vital important evidence – the fact that lack of internal controls could lead to the demise of an institution was emphasized.

Table 1: Recommendations for the Bank of England

i) Go further in its role as consolidation supervisor[1]
ii) Seek to obtain a more comprehensive understanding of the non-banking businesses in a group and of how the risks in such businesses are controlled, as part of the task of understanding where the "significant" risks in the group lie. The Bank should meet the management of these parts of the group on a formal basis and the questioning should range widely.
iii) Prepare internal guidelines to assist its staff in identifying "material risks" in a banking group and in protecting depositors[2]
iv) Ensure that it understands key elements of the management and control structures of those banking groups where it is responsible for consolidated supervision[3]. It should receive prior notice of significant re-organization and of significant new operations being undertaken by such groups together with relevant reporting responsibilities.
v) The scope of returns currently submitted to the Bank should be reviewed.
vi) A senior director should take responsibility within each bank for the accuracy of returns and should sign the most important prudential returns. He or she should meet the Bank at least once a year.
vii) Solo consolidation of any active trading entity within a bank should be formally approved by the Executive Director in charge of supervision and surveillance or one of Bank's Governors.
viii) Internal guidelines should be prepared for Bank staff as to the procedures to be followed with respect to the granting and review of solo consolidation.
ix) Review its Memorandums of Understanding (MOUs) with the Securities and Futures Authority and with other UK regulators.
x) Extend its international co-ordination where possible signing MOUs and involving non banking regulators.
xi) Extend its initiative of meeting the internal audit departments of banks and where the Bank is consolidated supervisor, should extend this to include the group internal audit function. The Bank should also meet the chairman of the audit committee in case of large UK incorporated institutions.
xii) Review the number and skills of the staff it considers it needs for on-site visits and consultation on a range of capital market and other issues.
xiii) The scope of section 39 reports should be extended to go outside banks and outside the UK as necessary and could be used more flexibly[4].
xiv) Periodically require authorized institutions to widen reports commissioned into systems and controls to cover the preparation and inputting of data in major overseas locations.
xv) Extend its guidance to managers in relation to large exposures, requiring that existing concessions are formally reported to the relevant Head of Division on an annual basis and that breaches be reported upwards regularly.
xvi) Complete examination of the extent of issuance of comfort letters and guarantees.
xvii) Introduce an independent quality assurance review of its supervision of banks and regular reports should be made to the Board of Banking Supervision.

[1] Expertise from different areas (securities, insurance, banking) now operate within the FSA.

[2] Another difficulty detected in the Bank of England's supervisory regime was the role of voluntary codes issued as guidance – see First Report from the Treasury Committee Barings Bank and Int. Regulation at pg xv. It wasn't obligatory for all financial institutions to adopt certain codes and there was no formal mechanism to effectively police adherence to the code or punish those who disregarded its requirements.

[3] This highlights the importance of skills-mix which are present in FSA and importance of having a single regulator which benefits from knowledge of many sectors – as opposed to a specialist regulator.

[4] This is necessary due to the growing multi functional and international nature of firms.

REGULATION UNDER THE FINANCIAL SERVICES AUTHORITY

The FSA is the renamed Securities and Investments Board (SIB) which was set up under the *Financial Services Act 1986.* The FSA's regulatory objectives include maintaining confidence in the financial system, promoting public understanding of the financial system, securing the appropriate degree of protection for consumers and reducing financial crime (FSMA, 2000). Just a comparison of the aims and objectives of the FSA and the Bank of England highlight where their work and concentration is focussed. The focus on public awareness and consumers by the FSA is a testament to its commitment towards public accountability. The FSA's regulatory principles include: The need to use its resources in the most efficient and economic way (FSMA, 2000), the responsibilities of those who manage the affairs of authorized persons; the principle that a burden or restriction which is placed on a person, or on the carrying on of a regulated activity, should be proportionate to the benefit intended to be conferred in general by that provision (FSMA, 2000); the desirability of facilitating innovation in connection with regulated activities; the international character of financial services and markets and the desirability of maintaining the competitive position of the United Kingdom and the principle that competition between authorized persons should not be impeded or distorted unnecessarily (FSMA, 2000).

The statement of these objectives and principles provides for a clearer regulatory framework in comparison to those objectives of the previous regulator, the Bank of England - which was largely opaque as regards its aims. These objectives will be key to holding the FSA accountable as to how it operates. There have been debates relating to the order of priority of the objectives and whether some principles should be given as much priority as objectives. The consumer objective whilst ensuring that some accountability is afforded by the FSA towards consumers, has been considered by some to impose too much a burden on consumers (House of Parliament, 1999). In addition, Goodhart (1998) suggests that a single regulator may lack clear focus on the objectives and rationale of regulation.

According to Vieten (1197), banking regulation has followed two trends namely: that supervision has become increasingly formalized and reliant on quantitative tools and that regulatory duties are pushed down a regulatory pyramid to include external auditors and to enlist the resources of regulatees. According to the Core Principles (Basel Core Principles) for effective Banking Supervision 1997, an effective banking supervisory system should consist of a mix of both “on-site” and “off-site” supervision. The UK system involves both on-site and off-site supervision (Singh).

Off-site supervision involves the regulator making use of external auditors. Off - site supervision by the FSA (Use of External Auditors by the FSA), is based on the Supervision Manual (SUP). The SUP forms part of the regulatory processes section of the FSA Handbook and SUP 3 of this manual which deals with auditors, states that (Hitchins, Hogg and Mallett: p. 152). The FSA must ensure that auditors have the skill, resources and experience to enable them deal with the scale, nature and complexity of the bank and regulatory requirements to which it is subject; A bank must notify the FSA as soon as it has been informed that its audit is likely to be qualified; If the auditor writes to the bank about its internal controls, the bank must inform the FSA promptly of material issues; Auditors of banks must co-operate with the FSA by attending meetings and supplying information; The FSA may pass auditor's information relevant to their function as they are bound by the confidentiality provisions of FSMA 2000; Auditors ceasing to audit a bank must notify the FSA, without delay, of any matter connected with their departure which the FSA should know or if there is nothing they need to know about.

On-site work is usually done by the examination staff of the bank supervisory agency or commissioned by supervisors but may be undertaken by external auditors(Basel Committee, 2002). At present, the external auditor assists the FSA through a mixed system of supervision whereby the FSA inspects banks (on-site) and utilizes external auditors (off-site). The FSA expects banks to provide information voluntarily to deal with it in an open and co-operative way and tell it promptly about anything significant

(SUP 2, Hitchins, Hogg and Mallett: p. 152). If necessary however, the FSA can use its powers to obtain information, require the preparation of reports by skilled persons, appoint investigators and apply for a warrant to enter premises (SUP 2, Hitchins, Hogg and Mallett: p. 152). The FSA can also visit banks – with or without notification and a bank's employees, agents or representatives may be asked to go to FSA's offices and must be available for meetings (SUP 2, Hitchins, Hogg and Mallett: p. 152). Privileged communications need not be disclosed – unless the holder or subject is supervised or the subject gives consent, "Bank representatives must also give FSA representatives access to premises on demand during reasonable hours. FSA can also ask banks to provide information for other regulators".

Barings as well as highlighting the problems and gaps which existed with prudential banking supervision, poor regulation and supervision of multi function firms (bank and securities regulation), also highlighted the misleading problem of relying on the capital adequacy ratio as the sole source of determining a financial institution's well-being. Regulators impose liquidity monitoring measures on banks to meet specified minimum levels of withdrawals but such measures are precautionary against short-term cash flow problems rather than a situation of panic outburst (Gleeson, 2006). The level of confidence reposed in the public by the financial community is what sustains banks in modern times and this is strengthened by external checks which is given by credit agencies through scrutiny of published accounts and by bank regulation through prudential supervision (Gleeson, 2006). Prudential regulation however, is not the only way in which the FSA takes interest in the financial management of authorized firms – there is also the principle of ensuring that a firm operates with required minimum level of capital in order to reduce the consequences of failure (Gleeson, 2006).

Statutory requirements govern the minimum amount of capital which a bank must have (Gleeson, 2006). These have been established by UK and European legislation and from internationally agreed recommendations of the Basel Committee on Banking Supervision (Wagster, 1999). The FSA's approach to the calculation of the capital base and the capital ratios and the assessment of capital adequacy are set out in chapters of the FSA's Interim Prudential Sourcebook for Banks [IPRU (BANK)] (Wagster, 1999). This has been supplemented by FSA policy statement Individual Capital Ratios for Banks. In due course this will be replaced by the Integrated Prudential Source book (Hall, 1997). In addition, at the international level, the Basel Committee has issued far-reaching proposals to refine and develop the current approach.

A COMPARISON OF REGIMES

At the time of the enactment of the Banking Act 1979, it was expected that parliamentary control over and accountability for the Bank's general direction of regulatory activities would be achieved at various levels (Hadjiemmanuil, 1995: p 404). However, the handling of individual cases was realized to be a quasi-judicial matter in which responsibility was assigned to the Bank only – thereby excluding the Treasury (Hadjiemmanuil, 1995: p 404). The form of indirect political accountability whereby the Bank was accountable to Parliament through the Treasury had proved unworkable as Treasury ministers were powerless to intervene in the supervisory process. According to Hadjiemmanuil (1995) "The Bank would keep the Treasury informed about its regulatory activities but Treasury declined to reveal to Parliament the content of its contacts with the Bank. Common practice had it that Chancellors ensured they had been aware of specific actions of the Bank – relating to banking supervision and last-resort lending but they declined to take responsibility for any actions connected to such. The decision to rescue Johnson Matthey was attributed to being that of the Governor of the Bank and not that of the Treasury – even though the then Chancellor of the Exchequer and the Economic Secretary to the Treasury indicated their support of the Governor's decision."

Many questions have been raised in relation to the FSA's ability to be held accountable – given the all embracing nature of its role and concentration of powers. Such questions include (Ferran, FSMA Section

2) whether the FSA could be made sufficiently accountable to industry whilst avoiding regulatory capture, whether it could be made properly accountable to consumers without creating false perceptions and possible moral hazard concerns about the extent to which the regulatory system would protect them from financial risks and the mechanisms in place to hold it politically accountable since it is independent of government. Fears particularly relate to the discretion given to the FSA as to how best to meets its objectives (Treasury Committee, 1996) – even though many commentators (FSMA, section 8-9) have suggested that the regulatory objectives and principles provide a basis for legal accountability. As a result of consolidation of the responsibilities for financial regulation into a single regulator, there are less possibilities for gaps in accountability since there is clearer evidence as to who is responsible for what.

The FSA Chairman suggested that the "prime accountability route" for the FSA would be through Ministers to Parliament but some commentators have doubted the effectiveness of political accountability in relation to the FSA. Even though there is government control in that HM Treasury appoints the FSA Board, can order independent reviews of its financial affairs and commission independent inquiries into regulatory failures, the Treasury cannot intervene directly in the FSA's affairs apart from limited situations concerned with competition (FSMA, section 8-9: p 26).

As regards public accountability, the FSA is obliged to maintain arrangements for consultation with consumers and practitioners (FSMA, section 8-9). There are also concerns that the independence of the Practitioner and Consumer Panels would be compromised since they have been established by the FSA. However statutory roles were given to both the Practitioner and Consumer Panels and on the 18th June 2001, the commencement order giving these roles came into force. Section 11 of the *Financial Services and Markets Act 2000* brought an important part of the formal accountability of the FSA to the Panel into effect and provides that if the FSA should ever reject formal advice offered by the Panel, it should have to explain its reasons in writing (The Financial Services Practitioner Panel, 2005). In addition, the Practitioner Panel has a measure of independence from the FSA as its chairman cannot be appointed or dismissed without the approval of the Treasury (House of Parliament, 1999: p 56). A brief account of the mechanisms whereby the FSA is held accountable is summarized as in Table 2 (Houser of Parliament, 1999: p 54-57).

LEGISLATION, ENFORCEMENT DURING AND AFTER THE FINANCIAL SERVICES ACT 1986

The extent to which the FSA could be judged to be a better model of accountability will very much depend on its approach to rule-making and enforcement (MacNeil, 1999: p 743). The original rulebooks of the five self-regulating organizations (SROs) which existed under the Financial Services Act 1986 were perceived as being unduly legalistic and lacking in coherence (MacNeil, 1999: p 731). The "new settlement" introduced by the Companies Act 1989 helped to resolve these problems by introducing new provisions into the FSA 1986 Act which would help simplify individual rulebooks of the SROs and provide some consistency between them (MacNeil, 1999: p 731). The result of the "new settlement" was that the rulebooks of the SIB and the SROs were divided into three tiers namely: 10 general principles; 40 core rules which were a mandatory part of the SRO rulebooks and third tier rules made by the SROs (MacNeil, 1999: p 731). However, this three-tier structure changed on the advent of a new SIB Chairman in 1992. A move away from emphasis on rules and the structure of rules to compliance with the spirit of the rules and an emphasis on management responsibility for compliance was realized (MacNeil, 1999: p 731).

A number of problems related to enforcement arose from the FSA 1986. These included the relative inexperience of regulators in operating the system combined with the on-going process of development of the rules (MacNeil, 1999: p 739).

Table 2: ACCOUNTABILITY MECHANISMS OF THE FSA

The Treasury: The chairman and the Board of the FSA are to be appointed and replaced by the Treasury. The Treasury also has the role of approving other appointments in relation to the FSA, such as the independent investigator. The FSA is required to submit an annual report to the Treasury which must also be laid before Parliament. The Treasury will be able to commission independent reports on the economy, efficiency and effectiveness with which the FSA has used its resources. The FSA must also give the Treasury copies of any rules and guidance it makes. Where competition concerns exist about the FSA or its rules, the Treasury can instruct the FSA to remedy the problem.
Parliament: Since the FSA's annual report is to be laid before Parliament by the Treasury, the report will be available for Parliamentary scrutiny.
FSA Board: The FSA will be accountable to its Board. The Board is required to have a majority of non-executive directors. A non-executive committee of the board is charged with keeping under review the efficiency of the FSA's discharge of its responsibilities.
Independent Complaints Investigator: Such an investigator is responsible for investigating complaints about exercise of the FSA's functions. Investigator's appointment and dismissal requires Treasury approval.
The Public: The FSA will hold public meetings on the annual report where there must be reasonable opportunity for questions to be put before the FSA.
Consumer and Practitioner Panels: The FSA is required to consult both panels about how far its general policies and practices conform to its statutory duties. This statutory obligation also includes its regulatory objectives and principles.
Consultation: The FSA is obliged to conduct public consultation on rules which it proposes to make. This provision aims to ensure that rule-making powers are used in a way that is focused and transparent.
Statutory Immunity: The FSA and its staff are given statutory immunity from liability in damages for things done during discharge of their functions. This immunity extends to staff of the compensation scheme and does not apply to actions done in bad faith nor to damages arising under the *Human Rights Act 1998.*

Apart from the fact that the SIB/FSA had no power to fine under the FSA 1986, there was also the problem of identifying separate roles of the SIB/FSA and the SROs in enforcement (MacNeil, 1999: p 740). Although a number of changes were made by the introduction of the Financial Services and Markets Bill, some provisions were carried over from the FSA 1986 to the FSMB (See FSA 1986,s61(1) and FSMB clause 332; FSA 1986, ss 65-68 and FSMB clauses 166-169; FSA 1986,s 28 and FSMB clause 40; FSA 1986, s59 and FSMB clause 113). Under clause 98 of the FSMB, the FSA was given a general power to fine authorized persons and specific powers to impose civil fines related to market abuse. The FSA's powers of "monitoring and enforcement" are contained within section 6 of Schedule 1 Part 1 - section 6(1) of the FSMA which states that 'The Authority must maintain arrangements designed to enable it determine whether persons on whom requirements are imposed by or under this Act are complying with them.' Part III of Schedule 1 deals with penalties and fees.

The FSA Handbook describes the FSA's risk based approach to supervision. The FSA operates on a risk-based approach whereby it differentiates between regulated institutions and allocates resources to areas of greater perceived risk (Hitchings, Hogg, Mallett, p:120-121). It identifies three sources of risk namely (Hitchings, Hogg, Mallett, p:121): The external environment; consumer and industry-wide risks and the regulated institutions themselves. Furthermore, the FSMA 2000 requires the FSA to pursue its objectives by re-enforcing the responsibilities of senior management (Hitchings, Hogg, Mallett, p121). Risk, in particular risk to its four statutory objectives, is now used as the determinant for all regulatory activity, including overall strategy and development (Gray and Hamilton, 2006: p 25). It has the following stages (Hitchins, Hogg and Mallett, p:123-124): Identifying the risks to the statutory objectives; Assessing and then prioritizing the risks; Considering the probability of a problem occurring by considering factors such as business risk, external context and the firm's business strategy and decisions; Prioritizing its regulatory position by "multiplying" the impact of the problem (if it occurs) by the probability of the problem

occurring, "in doing this it takes into account (i) Its confidence in the information on which the risk assessment is based; (ii) The quality of home country supervision – for overseas banks in the UK and (iii) The anticipated direction of change in the impact and probability gradings" (Hitchins, Hogg and Mallett, p124). Having completed these assessments, the FSA, taking into account the resources at its disposal, will decide on its regulatory response.

CONCLUSION

Overall, the FSA's risk based approach has led to a reduced role for auditors in banking supervision (Dewing and Russell, p 107). From 1 April 2003 to 31 March 2004, the FSA exercised its power under section 166 of the Financial Services and Markets Act 2000 to require firms to produce a skilled person's report in 28 situations (Dewing and Russell, p 107). This is a considerable reduction in investigations from the number of reporting accountants commissioned under section 39 Banking Act 1987 which frequently exceeded 600 reports annually (Dewing and Russell, p 107).

Although there has been a reduction in the FSA's use of external auditors when compared to the regime of its predecessor the Bank of England, it can still be argued that the FSA not only possesses better accountability mechanisms than the Bank, but that so far, it has used these mechanisms reasonably well. This is evidenced by the FSA operating on a more rules-based regime, providing greater identification of its role in enforcement and having a clearer set of principles. Effective implementation is definitely more important than the sole possession of accountability mechanisms. Issues within the FSA which need to be addressed include funding: The FSA is independent of and does not receive any funding from the government. To finance its work, it charges fees to all authorized firms that carry out activities it regulates "general powers to raise there fees are set out in schedule 1, part 111" (FSMA, para 17). Given the way charges are imposed on regulated firms, better accountability mechanisms should be in place for the way the FSA's costs are incurred. It is also arguable that its principle of utilizing its resources in the most efficient and economic way (FSMA s 2 (3)(a), should be elevated to the status of an objective.

In response to the FSA's ability to levy unlimited fines, the government has agreed that these fines should be set off against the FSA's other finance to reduce any incentive to maximize penalties and that the FSA should not be able to add its own costs to any levied fines (The Economist, 1999). On the 27th May 2005, a review of its funding regime was announced with the realization of the need to drive down costs. The period from the 1st April 2004 to the 31st March 2005 saw particularly the review of 2 aspects of the FSA's performance and this has provided sufficient, if not absolute evidence that the FSA has performed well so far. The first of these aspects involved examination of costs imposed on the regulated – this being done jointly with the Practitioner Panel (FSA Annual Report, 2004/05: p 5). The second was the examination of the effectiveness and fairness of the FSA's enforcement process (Statement by Chancellor of Exchequer, 6 May 1997)

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WORK-FAMILY BALANCING AND WORKING TIME: WHAT MEASURES ARE AVAILABLE TO CANADIAN WORKERS AND WHAT MEASURES SHOULD EMPLOYERS DEVELOP?

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ABSTRACT

This article examines work-family balance. Data from the Workplace and Employee Survey (WES) was used to assess the overall situation of this phenomenon in Canada. Representative statistical data was used to determine to what extent employers have taken the work-family challenge into account. Our data indicate that the progress observed regarding the social debate on work-family balance has not necessarily translated into a marked improvement in facilitating conditions in workplaces and that there have even been setbacks. Indeed, the number of workdays per week has slightly increased, reaching almost 5 days on average for men and 4.6 days for women in 2002. Moreover, a significant percentage of the Canadian workforce is on flexible work schedules or rotating shifts, which were identified as a source of difficulty for work-family balance. On the other hand, a great proportion of Canadian workers report that they work a number of hours at home, which may foster balance but can also be a source of encroachment on private life. The WES data show that people work at home because of work demands and not for reasons of work-family balance. In brief, work spills over into their personal lives. Moreover, although the most pressing desire of Canadian parents with children under the age of 3 is that employers offer help with daycare and on-site childcare services, barely more than one-quarter of Canadian workers report that their employers offered childcare services in 2002. Also, employers offer help with eldercare services to only one-tenth of Canadian workers. As regards the impact of the number of children, its effect on work time, schedules and preferences related to work time is ambiguous. As regards interest in work time reduction, the effect is also ambiguous but workers with one child or two children expressed a slightly greater desire to reduce their work hours. On the other hand, a link was found between the number of children and the desire to work extra hours since the more children workers have, the less they want to work extra hours.

INTRODUCTION

Several studies in recent years have shown that many employed parents are having difficulty balancing work and family responsibilities and that this is a source of stress for them (Duxbury et al., 1993, 1994; Nelson and Quick, 1985; Galinsky et al., 2001; Tremblay, 2004, 2003, 2002a; Tremblay and de Sève, 2002; Paquet and Najem, 2005). Indeed, the organization of workers' lives and their time outside of work has been greatly affected by changes which have occurred in the labor market over the last 30 years. These changes, which translate, in particular, into work intensification, and the diversification of types of employment (temporary, self-employment, on call, casual) and schedules (part-time, split schedules, etc.) further intensify the difficulties that parents are experiencing linking work and family.

A whole range of studies, developed mainly in Europe, focus on the temporal dimension of the relationship between work life and life outside of work and the resulting difficulty in balancing these. Some of these studies show that the measures of work-family balance most sought by parents with young children are those related to flexibility in work schedules (Lero et al., 1993; Tremblay, 2004). Drawing on the perspective from which these studies were approached, the present article examines work schedules, the impact of work-family

balance measures centered on working time arrangements, and other types of work-family balance measures affecting Canadian workers.

Surveys conducted on work-family balance generally involve small samples, often just a few hundred people (Descarries and Corbeil, 1995, 1996; Descarries et al., 1995a, b; Guérin et al., 1997; Tremblay and De Sève, 2002). Although this method has the advantage of providing an accurate portrait of and precise information on those most directly concerned by work-family balance -- working parents -- the data are not representative of the working population as a whole. Thus, in order to fill this gap concerning general representativeness of the Canadian workforce, data from the Workplace and Employee Survey (WES) were used to assess the overall situation in Canada based on representative statistical data.

A first version of this paper was published in French in Enfances, familles et générations, a Québec online journal. This constitutes the first part of a France-Canada comparative research study aimed at determining the work-family balance measures which exist in both countries and their potential impact on women's participation in the workforce and work hours. This research was funded by DARES (Direction de l'analyse, de la recherche et des études statistiques) of France's ministère du travail (labour ministry), to which we would like to express our thanks. This article is divided into three parts. Part 1 reviews the literature; Part 2 examines the data used and Part 3 presents the research results. The scope and limitations of our main findings will be discussed in the general conclusion.

LITERATURE REVIEW

It is difficult to briefly summarize everything that has been written over recent years on the issue of work-family linkage or "conflict" and the stressors associated with this situation. "Conflict", which is usually used by psychologists, refers to role "conflict"; it is not necessarily the best way to approach the phenomenon of work-family linkage, as was observed in the qualitative part (interviews) of the studies conducted. Indeed, according to some studies (Tremblay, 2004, 2003), parents do not identify with this expression. Nevertheless, we have used it here when the authors used it themselves.

We will therefore present only the main writings relevant to the subject of study identified above. Thus, while some studies consider that work characteristics are influencing factors in work-family *conflict* (Guérin et al., 1997), other studies emphasize the importance of socio-occupational category as a factor which differentiates men's participation from women's participation in parental and professional responsibilities (Nelson and Quick, 1985). Since these two spheres are necessarily interrelated, greater involvement in one sphere often occurs at the expense of the other sphere. Of course, balance and equivalent participation exist among some couples, but this is not generally the case even though men's participation in family activities has increased in Quebec and Canada (Pronovost, 2005).

As has been stated previously, several studies attest to the feeling, expressed by parents of young children, that they lack time, and demonstrate that a great proportion of employed parents suffer from stress related to their difficulty balancing work and family responsibilities. According to Carlson et al. (2000), studies conducted to date have highlighted three types of conflict: time-based, strain-based and behavior-based conflict. Time-based conflict results from multiple-role overload and the difficulty in coordinating the competing demands of each of these roles, and this is our main subject of interest. However, it must be specified that strain-based conflict comes from the stress experienced in one role which affects participation in another role, interfering with the latter. Behavior-based conflict occurs when behavior specific to one role is incompatible with that expected in another role and the individual has not made the necessary adjustments to them. Since the latter two elements are the main focus of interest of psychologists, we will concentrate more on work-family balance from the perspective of possible time arrangements.

The factors which influence the extent of work-family conflict can be grouped into three broad categories: those related to work, employees and the family. As regards the factors related to work, we will consider the work environment and work characteristics, including the existence of "work-family" balance practices. Other work characteristics include: type of job, nature of tasks and roles, number of hours worked per week and work schedule; these last two factors proved to be influential in several studies (Guérin et al., 1997; Tremblay, 2004, 2004b).

Based on a literature review, Nelson and Quick (1985) present a model of stressors among employed professional women. It shows that a great number of variables are linked to work organization and that many elements are associated with the individual's particular position. Another study conducted in 2001 on a sample of 1003 American workers aged 18 or older (Galinsky et al., 2001) examined the factor of work overload by assessing the various aspects of their work which make workers feel they are affected by this situation, that is, the number of hours worked per week and their preferences, the number of days worked per week and their preferences and, finally, employees' belief that they cannot adapt their work schedules (in terms of hours and days) according to their preferences. In brief, it is largely the gap between expectations and what is offered which is the source of the problem. We are particularly interested in this last aspect and will return to it in the presentation of results in Part 3 of this article.

In Quebec, Guérin *et al.*'s study (1997) of 1345 unionized employees belonging to the CSN (Confederation of National Trade Unions) with at least one dependent child (75.6 % of women and 24.3 % of men) examined the effect of job type, role conflicts, job ambiguity, work overload, work schedule, and travels to and from work on employees' stress levels, with work overload and work schedules found to be determining variables.

Other authors have focused on work characteristics. The organization of work time (long hours, rotating shifts, changing work days or hours) has been shown to be a stressor for employees in numerous activity sectors because it has an impact on their work life while disrupting their life outside of work, often having a negative impact on their health (Families and Work Institute, 1998, Galinsky et al., 2001). We therefore decided to analyze the dimensions of work hours, rotating shifts, and changing work days or hours by using the WES data on this subject.

As regards the factors related to family, several stressful factors can be identified in the family. Guérin *et al.* (1997) identified some factors related to children which turned out to be determining in work-family conflict (number, average age, presence of a disabled child, total responsibility related to children). This study showed that work-family conflict increases with the number of dependent children and, consequently, our analysis of the WES data will be differentiated according to the number of children.

We also reviewed the literature on the influence of measures available to assist employees and their families. Among the practices which exist to facilitate work-family balance, Guérin *et al.* (1994) identified childcare services, voluntary part-time work and home working, extra pay and maternity leave. We will thus examine childcare services offered by organizations, the reduced or compressed work week, and home working. Indeed, the data presented in this article will show how these practices have spread and who is benefiting from them ten years after Guérin *et al*'s study. In fact, as was observed (Paquet and Najem, 2004; Tremblay, 2004), there is often a wide gap between the availability of a practice in a company and the possibility for employees to take advantage of it, hence the importance of analyzing its impact.

METHODOLOGY AND DATA SOURCE

In order to answer, in an informed way, the questions raised in this article, we used the data of Statistics Canada's *Workplace and Employee Survey* (WES) which provide researchers with empirical data that is representative of the Canadian labor market. For the purposes of this research, we used data which were merged together, that is, those collected from employers and employees' answers to the survey. In fact, the WES includes two databanks - one for employers and one for employees – which together contain several hundred indicators. The WES targets a representative sample of the Canadian labor market, except the federal, provincial and municipal public services which are excluded from it. Its data were collected from more than 6000 companies and some 23,000 employees working for these companies (Statistics Canada, 2004). The data banks are constructed in such a way that they can be merged, yielding all the available information on an employee and the company which employs him or her. The results presented in Part 3 of this article stem precisely from these two merged databanks.

For the purposes of this research, we used weighted results which make it possible to generalize the data to the Canadian labor market, with, as already mentioned, the exception of the public services. The data used come from the 1999 and 2002 surveys. On a longitudinal basis, this period is relatively short (4 years) but nevertheless allows us to clearly grasp the labor market trends, especially since these four years were marked by an important societal debate on the issue of work time and work-family balance. If practices within companies followed the social trend of ideas and debate, changes should be seen over the period examined.

The data for 1999 were chosen because it was the first year of the WES. At the time of our analysis, data for 2002 were the latest data available since 2003 and 2004 survey data are not yet accessible to researchers. It should also be mentioned that SAS software was used to pair the two databanks (employers and employees), to recode information and to construct composite variables as well as for the univariate and bivariate statistical analyses which are presented here.

The WES data are, of course, highly reliable. However, as we will see in Part 3 of this article, since this survey involves workplaces and employees' work, it could, in the analysis of results, lead to findings that are quite different from those produced using data from, for example, Statistics Canada's *General Social Survey* (see Robinson, 2004). This latter survey studies time use and time taken up by work, thus involving the entire population and not only employed people, as is the case of the WES. As this research was conducted in the context of international comparisons with France, we dealt with Canadian data and not Quebec data, especially since Statistics Canada restricts the dissemination of results when there are not enough respondents in a given case; Canadian data are based on a greater number, thus reducing the number of unavailable data. We will return to this last point in the presentation of results.

RESULTS

Based on our literature review, Part 3 will present the analyses which we conducted in order to determine whether work schedules vary according to gender or the number of children and whether employees with family responsibilities have longer or shorter work schedules than other employees. We will then examine individuals' preferences related to work time (would they like to extend or reduce their work hours?) and, in particular, the reasons they gave for their interest in reducing work time, most notably family responsibilities. Lastly, we will consider the impact of measures related to working time arrangements, including the reduced or compressed workweek, a measure known to be conducive to a degree of balance. We will then look at how the situation presents itself based on gender and the number of children. In this last section, we will also present the data on the measures offered in childcare or eldercare services.

Work Hours According to Gender and Number of Children

Table 1 presents the hours normally worked, by gender, in 1999 and 2002. It shows that women usually work fewer hours per week than men, that is, 33.88 hours in 2002 for women versus 39.51 hours for men during the same year, which suggests that many women reduce their work hours in order to balance work and family responsibilities. Moreover, as will be seen below, more women than men would like to reduce their work hours, more often for family reasons. During the same period, the number of unpaid or paid extra hours decreased. However, the number of workdays per week increased slightly, reaching almost 5 days (an average of 4.93 days for men and 4.6 for women in 2002).

Home working is sometimes perceived as a way to balance family and work responsibilities (Tremblay, 2002), although it can further blur the boundaries between work time and personal or family time. This may also be viewed as a negative intrusion into private life (Baines and Gelder, 2003). Between 1999 and 2002, the number of work hours at home increased for men and women, with both groups performing on average 6.14 and 6.13 work hours at home respectively. Although this phenomenon is considerable and corresponds to almost one workday per week, this average must be interpreted with caution because it conceals a degree of polarization where, on the one hand, some employees never work at home while, on the other hand, other employees bring work home everyday because they cannot accomplish their tasks within the normally scheduled work hours.

Table 1: Work Hours by Gender, 1999-2002

	Women 1999	**Men 1999**	**Women 2002**	**Men 2002**
Hours normally worked	33.97	39.51	33.88	39.51
Unpaid extra hours	1.71	2.42	1.26	1.65
Paid extra hours	0.51	1.63	0.13	1.17
Nr of workdays per week	4.11	4.53	4.60	4.93
Weekly work hours at home	5.34	5.80	6.14	6.13

Although several studies report that the number of children has a significant effect on the difficulty of balancing work and family responsibilities, the data in tables 2a and 2b show that this effect is ambiguous, to say the least. Indeed, although the increase in the number of children is accompanied by an increase in the number of unpaid extra hours for workers with up to two children, this latter number subsequently drops slightly for those with three children. On the other hand, for both 1999 and 2002, the number of paid extra hours tended to increase with the number of children although their overall numbers were lower than those cited for unpaid extra hours. The effect on home working is even more differentiated. Although, when compared with the absence of children, the presence of a child translated into an increase, the number of hours dropped for individuals with 2 children and even more for those with 3 children. It thus seems that the presence of more children tends to reduce the number of hours that employees work at home.

It is important to note that several realities are hidden behind the averages related to the number of hours worked by number of children (when gender is not considered). First, the small differences could be the result of a decrease among women compensated by an increase among men, as found by Robinson (2004). Moreover, given that the WES targets employed people only, the averages do not take into account the fact that some women leave the labor market temporarily.

Table 2a: Work Hours by Number of Children, 1999

1999	**No children**	**1 child**	**2 children**	**3 or more children**
Hours normally worked	35.88	38.01	37.09	37.35
Unpaid extra hours	1.86	2.06	2.45	2.14
Paid extra hours	0.91	1.09	1.15	1.55
Nr workdays per week	4.26	4.43	4.22	4.21
Weekly work hours at home	5.31	6.75	5.40	5.38

Table 2b: Work Hours by Number of Children, 2002

2002	**No children**	**1 child**	**2 children**	**3 or more children**
Hours normally worked	36.17	37.36	37.25	36.81
Unpaid extra hours	1.32	1.51	1.74	1.40
Paid extra hours	0.51	0.66	0.91	0.75
Nr workdays per week	4.74	4.81	4.80	4.73
Weekly work hours at home	6.45	6.67	5.81	4.92

Moreover, some working time arrangements can be a source of additional difficulties, as shown by the studies mentioned in the literature review above. Schedules of rotating shifts and changing work hours or workdays may also represent challenges for those who seek to balance their personal and family responsibilities with work.

The WES data presented in Table 3 indicate that, between 1999 and 2002, the number of rotating shifts increased for both women and men and that this increase was more significant among women. On the other hand, women more often worked the same days each week and the same hours each day than was the case for men in 2002, while the reverse was true in 1999. The data are not highly diversified by number of children, except that in 2002, rotating shifts were less frequent as the number of children increased, dropping from 53% with the presence of one child to 47% for two children, and 40% for three children.

Table 3: Diversified Work Schedules, by Gender, 1999-2002

	Women 1999	**Men 1999**	**Women 2002**	**Men 2002**
Rotating shifts	34.11	46.40	48.09	48.73
Same hours each day	56.00	60.99	76.82	64.98
Same days each week	54.49	65.43	68.72	66.95

It can be concluded that a significant percentage of the Canadian workforce work on flexible schedules or rotating shifts, which have been identified in other studies as a source of difficulty in balancing work and family responsibilities (Guérin et al., 1997; Tremblay, 2002a; Tremblay and De Sève, 2002). The number of extra hours is in general not very considerable and individuals can apparently work a number of hours at home, which may foster work-family balance but can also be a source of encroachment on private life (Taskin and Vendramin, 2004).

Preferences Related to Work Time

Preferences related to work time have been widely debated in Canada and elsewhere. A survey conducted in the 1990s by Human Resources Development Canada indicated that only 6% of the Canadian population would like to reduce their work hours (Human Resources Development Canada, 1997). On the other hand, a survey conducted on this subject by the CEQ in the 1990s highlighted the fact that, with partial wage compensation, 66% of members of the *Centrale de l'Enseignement du Québec* (Quebec teachers' federation) were in favor of reducing in their work hours. Moreover, 48.8% of those interviewed for a survey conducted by the FTQ said that they would accept a reduction in their work hours without compensation or with partial wage compensation. Since the latter two surveys were conducted on small samples which were not representative of the general population, we decided to compare them with the WES data, especially since these data also indicate the reasons behind the desire to reduce work hours, in particular, family responsibilities.

The results of this analysis are presented in Table 4, which shows that the majority of workers were satisfied with their work hours, since in both 1999 and 2002, only around one out of five men and women expressed a desire to work extra hours, whereas approximately 10% of each group expressed a desire to reduce their work hours in 1999, and only 7.6% of men and 7.95% of women wished to reduce them in 2002. As regards the reasons behind the desire to reduce their work hours, family responsibilities ranked first for women (47% in 1999 and 59% in 2002), whereas relatively fewer men than women cited this reason. However, it should be noted that the percentage of men who expressed a desire to reduce their work hours because of family responsibilities increased from 36% to 42% during the same period.

Moreover, the data in tables 5a and 5b highlight the fact that the presence of children has an impact on the desire to reduce work time, but this effect is also ambiguous. Fewer employees with 3 children or more wanted to increase their work time, but also fewer of them wanted to reduce their work time, undoubtedly because of the effects on income. However, employees with children most often cited family responsibilities to explain their interest in reducing their work, when they did want to reduce their work time, hours, especially in 2002. The desire for more leisure time ranked second, followed by work-related stress which they wanted to reduce.

Table 4: Preferences Related to Work Time, by Gender, 1999-2002

	Women 1999	**Men 1999**	**Women 2002**	**Men 2002**
Wanted extra hours	19.55	18.62	18.33	21.89
Wanted to reduce their hours	9.13	10.37	7.95	7.60
***Reasons*: family responsibilities**	47.75	36.03	58.92	41.99
Work-related stress	17.90	17.96	33.45	28.74
Health reasons	5.82	4.58	17.60	12.99
More leisure time	47.24	61.29	56.52	62.82
Other	11.16	14.30	7.19	10.65

Table 5a: Preferences Related to Work Time, by Number of Children, 1999

1999	**No children**	**1 child**	**2 children**	**3 or more children**
Wanted extra hours	20.87	17.09	18.04	15.01
Wanted to reduce hours	8.42	10.59	12.02	10.23
Reasons*: family responsibilities	22.77	46.37	63.06	63.50
Work-related stress	18.77	20.48	13.47	21.85
Health reasons	5.66	7.55	3.36	3.78
More leisure time	62.46	50.93	44.70	49.98
Other**	18.17	9.42	8.63	4.82

Work-Family Balance Measures

This section will first deal with work-family balance measures centered on working time arrangements which have been identified as the main facilitating factor sought by parents (Lero et al., 1993; Tremblay and Amherdt, 2000). We will then examine childcare services and eldercare services since the former were identified as the main demand of Canadian parents of children under the age of 3 and the latter appears to be increasingly important since a growing number of workers today must care for an aging parent (Lero et al., 1993; Tremblay, 2004)

Table 5b: Preferences Related to Work Time, by Number of Children, 2002

2002	No children	1 child	2 children	3 or more children
Wanted extra hours	22.03	19.63	17.67	15.50
Wanted to reduce hours	6.57	9.07	9.47	8.22
Reasons*: family responsibilities	29.33	65.96	72.14	58.56
Work-related stress	34.10	34.85	21.79	36.88
Health reasons	21.86	8.43	9.51	16.11
More leisure time	66.19	53.03	58.75	43.98
Other**	12.16	6.06	5.09	9.99

**Family responsibilities included caring for children or other family members and other personal or family responsibilities.*
***Other reasons included seeking better working conditions, gaining time and saving money.*

It was mentioned above that home working is sometimes perceived as a way to balance family and work responsibilities (Tremblay, 2002), but it can also be perceived as a negative intrusion of work into private life (Baines and Gelder, 2003; Taskin and Vendramin, 2004). The data in Table 2 show that, between 1999 and 2002, the number of work hours at home increased for men and women, with both groups performing on average 6.14 and 6.13 work hours at home respectively or almost one workday per week.

The data in Table 6, on the other hand, indicate that, for both men and women, home working is mainly explained by work demands, as cited by approximately two-thirds of those who bring work home. Thus, it does not seem that home working is used first and foremost as a way to balance professional and family demands.

Moreover, it is interesting to note that, between 1999 and 2002, the number of women who cited work-family balance as a reason for home working declined (from 6.08 to 4.71% of women who brought work home) whereas the number of men citing this reason increased (from 2.28 to 6.75% of men who brought work home). Since studies on telework show that men in general, professionals or managers occasionally work at home, mainly to accomplish tasks that they did not manage to finish at the office (Taskin and Vendramin, 2004), it is plausible that they choose to do more work at home because they want to be present, even if they are not actually available for the family during this time. It can also be underlined that men are becoming more and more sensitive to the issue of work-family balance (*Politiques sociales*, 2003; Tremblay, 2003), such that this reason is now more readily cited by them than it was in the past.

Family responsibilities thus do not emerge as a main reason for home working. Moreover, it should be noted that, in addition to work demands which accounted for two-thirds of responses, "other" reasons were cited by 30% of employees who resorted to home working. Other studies on telework have indicated that saving time and money was the main reason cited (Cefrio, 2001; Taskin and Vendramin, 2004), and this also seems to be true here for a large percentage of Canadian women and men.

Table 6: Measures Related to Working Time Arrangements, by Gender, 1999-2002

	Women 1999	**Men 1999**	**Women 2002**	**Men 2002**
Home working	24.66	28.97	24.49	26.70
Reasons for home working: **Work demands**	66.80	64.65	65.31	62.29
Family responsibilities*	6.08	2.28	4.71	6.75
Other**	27.12	33.07	29.97	30.95
Compressed workweek	6.08	12.88	5.25	7.93
Reduced workweek	15.98	10.35	10.33	4.90
Flexible schedule	36.03	43.51	37.94	37.62

**Family responsibilities included caring for children or other family members and other personal or family responsibilities.*
*** Other reasons included seeking better working conditions, gaining time and saving money.*

As regards workweek arrangements, fewer workers took advantage of the compressed workweek in 2002 than in 1999. This was particularly obvious among men, for whom it dropped from 12.88% to 7.93%, while among women, it dropped from 6.08 to 5.25%. Moreover, it should be pointed out that the data in Table 1 highlight the fact that, compared to men, women's average workweek is 6 hours less (33.88 hours versus 39.51 for men), such that they already work an average of one fewer workday per week. Table 7, below, shows that the presence of children has an influence on the use of the compressed workweek, since this arrangement is more frequently used by workers with children than by those without children, with employees having one child or two children being the highest users.

The use of the reduced workweek by special arrangement with the employer has also dropped among both men and women, such that this measure currently seems to be less available for employees or less sought by them. However, as will be seen below, employees more often choose a reduced workweek as the number of their children increases.

Flexible-hours means that, while you must work a certain number of core hours, you can vary your times of arrival and departure as long as you work the equivalent of a full work week. As per working flexible hours, it seems that somewhat fewer men took advantage of this option in 2002 than in 1999, while the number of women who benefited from it increased slightly. Nevertheless, almost 40% of individuals affirmed that they made use of this type of schedule.

Tables 7a and 7b indicate that home working was more frequent among workers with one child or two children, with both these groups more often citing work-family balance as the reason, and that the percentage of those citing this reason even increased from 1999 to 2002. Work demands still ranked first regardless of the number of children, but work-family balance was the reason cited by almost 15% of workers with one child and by 8.5% of workers with two children. The percentages were close to only 6% in 1999.

As regards workweek arrangements, it was noted above that fewer workers took advantage of the compressed workweek in 2002 than in 1999, but that the percentages remained slightly higher among groups with one child or two children. Although use of the reduced workweek by special arrangement

with the employer dropped between 1999 and 2002, it nevertheless increased markedly based on the number of children, from 5.29% to 7.9% and then to 8.23% with the transition from 1 child to 2, then 3 children.

As regards flexible hours (i.e., the possibility to vary one's times of arrival and departure), between 35% and 40% of workers used this measure and this percentage increased slightly as the number of children went up from 1 to 2, then 3.

Although the most pressing desire of Canadian parents with children under the age of 3 (Lero et al., 1993) is that employers offer help with daycare and on-site childcare services, barely more than one-quarter of Canadian workers reported that their employers offered help or support in this matter in 2002. Moreover, it should be noted that the WES question related to this subject is unfortunately very comprehensive since it asks if the employer offers "help for childcare either through an on-site center or assistance with external suppliers or informal arrangements." This last element is rightly very broad, but it is hard to see what type of informal arrangement is suitable for parents on a regular basis, since children need to be cared for everyday when parents work everyday. This therefore suggests that these percentages refer mainly to on-site centers or external suppliers and informal childcare arrangements must not be very common.

Table 7a: Measures Related to Working Time Arrangements, by Number of Children, 1999

1999	**No children**	**1 child**	**2 children**	**3 or more children**
Home working	23.35	26.76	33.56	29.77
Reasons for home working: **Work demands**	63.76	69.50	67.22	64.20
Family responsibilities*	2.43	5.79	5.79	4.47
Other**	33.81	24.71	27.00	31.33
Compressed workweek	7.78	12.49	8.83	8.56
Reduced workweek	13.04	12.71	15.52	16.28
Flexible hours	40.39	37.50	39.06	40.20

**Family responsibilities included caring for children or other family members and other personal or family responsibilities.*
*** Other reasons included seeking better working conditions, gaining time and saving money.*

Although comparable and representative data for Quebec only are not available, the surveys conducted in Quebec show that parents of young children are not necessarily seeking childcare in the workplace, because the system of Centres de la petite enfance (early childhood centres) is well developed in Quebec and there is a fairly large number of daycare centres in neighbourhoods, which are subsidized by the government (childcare services with reduced contribution, i.e., $7 a day in 2005). Also, in studies conducted in Quebec on this subject, the presence or absence of daycare centres did not prove to be a determining variable or facilitating factor related to the difficulty of balancing work and family responsibilities (Tremblay, 2004)

Table 7b: Measures Related to Working Time Arrangements, by Number of Children 2002

2002	No children	1 child	2 children	3 or more children
Home working	21.72	26.20	30.61	33.64
Reasons for home working: **Work demands**	63.34	53.34	67.50	71.62
Family responsibilities*	0.71	14.93	8.48	4.70
Other**	35.94	31.74	24.01	23.67
Compressed workweek	6.21	6.31	7.94	5.71
Reduced workweek	8.18	5.29	7.90	8.23
Flexible schedule	38.23	35.81	37.45	39.82

** Family responsibilities included caring for children or other family members and other personal or family responsibilities.*
*** Other reasons included seeking better working conditions, gaining time and saving money.*
Other measures conducive to work-family balance

Table 8, interestingly, shows an increase in the percentage of companies offering this type of assistance since, in 1999, only approximately one out of five workers reported that their employer offered this type of service. It is also interesting to note that between 1999 and 2002, this increase affected both men and women.

Moreover, although in 1999, compared to women, men more often made use of help with childcare in their companies, the situation reversed in 2002 since 8.59% of women were found to use this type of service in their companies versus 6.21% of men.

It should be added that there is increasing concern about what is referred to as the "sandwich generation" based on a recent Statistics Canada article which indicates that more and more Canadian parents are simultaneously caught between dealing with childcare problems and caring for their aging parents. On this subject, the WES asked workers if their employers offered "help with eldercare services" (this is exactly how the question is formulated, which is not very precise but nevertheless gives a first indication of this issue which has not received much attention in studies).

Table 8: Other Work-Family Balance Measures, by Gender, 1999-2002

	Women 1999	Men 1999	Women 2002	Men 2002
Existence of help with childcare	20.75	18.03	29.51	26.46
Used help with childcare	5.30	6.11	8.59	6.21
Existence of eldercare services	12.36	10.35	12.89	12.80
Used eldercare services	5.98	11.75	6.54	1.87

Thus, the offer of these services has increased slightly in organizations, steadying at around 12%; and their use has apparently increased among women, while the data show a sharp decrease among men, which is somewhat surprising.

Examination of the issue in terms of presence or absence of children and number of children shows that, between 1999 and 2002, the offer of help with childcare services increased markedly for groups having no children or one child. These groups most likely include the youngest workers, who may have children in coming years. Moreover, they may have chosen a particular employer partly for this reason, as shown by some studies. This issue should be examined further. However, the WES data at least provide a first indication.

The offer of eldercare services has also slightly increased and, in 2002, this increase was more pronounced for groups with no children (especially) or one child; it went down for workers with 2 children and hardly changed for workers with 3 children. Data on use of this measure are not available by number of children. The number of respondents in the non-weighted sample of 23,000 people is less than five in some boxes in this distribution and, therefore, the data cannot be divulged for confidentiality reasons, according to Statistics Canada rules.

Table 9a: Other Work-Family Balance Measures, by Number of Children, 1999

1999	**No children**	**1 child**	**2 children**	**3 or more children**
Existence of help with childcare	17.82	16.23	22.90	22.91
Existence of eldercare services	12.80	8.01	11.20	9.64

CONCLUSION

The data presented in this article indicate that, on the whole, the progress observed regarding the social debate on work-family balance has not necessarily translated into a marked improvement in facilitating conditions in workplaces. Moreover, there have even been setbacks in some respects, making it even more difficult to balance conflicting demands.

Table 9b: Other Work-Family Balance Measures, by Number of Children, 2002

2002	**No children**	**1 child**	**2 children**	**3 or more children**
Existence of help with childcare	33.12	26.62	18.50	28.77
Existence of eldercare services	15.26	12.76	9.35	9.93

As regards work hours, based on these four years examined, the trends have not been moving in one direction only. However, it is noted that women work fewer hours than men, and more women than men would like to reduce their work hours, and more often cite family reasons for this desire. During the

period studied, the number of unpaid or paid extra hours decreased. On the other hand, the number of workdays per week increased slightly, reaching almost 5 days on average for men and 4.6 days for women in 2002.

It can also be added that a considerable percentage of the Canadian workforce work on flexible schedules and rotating shifts, which were identified in other studies as a source of difficulty in balancing work and family. Moreover, a great number of Canadian workers report that they work a number of hours at home, which may foster work-family balance but can also be a source of encroachment on private life. The WES data on this subject speak for themselves since they clearly demonstrate that workers do not work at home in order to better balance their responsibilities, but rather because of work demands. To sum up, it can be seen that work is spilling over into personal life instead of being a practice which offers individuals greater flexibility in organizing their time.

Moreover, although the most pressing desire of Canadian parents with children under the age of 3 is that employers offer help with daycare and on-site childcare services, barely more than one-quarter of Canadian workers report that their employers offered childcare services in 2002. Also, employers offer help with eldercare services to only one-tenth of Canadian workers.

As regards the impact of the presence of children, the assessment of its effect on work time, schedules and preferences related to work time shows that the effect of the number of children is often ambiguous. Thus, an increase in the number of children translates into an increase in the number of unpaid extra hours up to two children, but this number decreases with the presence of three children. As regards the effect on home working, the number of hours worked at home increases with one child, as compared to workers without children, but this number decreases for workers with 2 or 3 children. As regards the desire to reduce work time, the effect is also found to be ambiguous. Between 1999 and 2002, this desire declined among women and men, with more workers expressing a desire to increase their work hours, and the presence of children did not seem to increase the desire to reduce work time, contrary to what might be expected. Workers with one child or two children expressed a slightly greater desire to reduce their work hours. On the other hand, a link was found between the number of children and the desire to work extra hours since the more children workers had, the less they wanted to work extra hours. Moreover, although use of the reduced workweek by special arrangement with the employer decreased from 1999 to 2002, this use increased with the number of children. It thus seems that parents limit their extra hours and use the reduced workweek more without seeking to further reduce their work hours. Working time arrangements are thus relatively limited, since the use of both the compressed workweek and the reduced workweek declined from 1999 to 2002 for both women and men.

To sum up, it appears that management in organizations is still based on a model which presumes that family responsibilities are matters which do not concern employers. It seems that, although work-family linkage is discussed in the public sphere, it is still seen as belonging to the sphere of private life, involving personal adjustments on the part of employees, and even, in some circles, as being a “matter for women” rather than a “societal matter.” Yet, the problem of work-family linkage will only become more acute in the future, not only because women are increasingly working full time, with this phenomenon being particularly marked among women with children, but also because more difficulties are emerging related to the care of parents who are old or sick Arrangements within the family will thus become increasingly complex. Thus, in order to ensure a fair integration of women into the labor market and an equal participation of men in parental and family responsibilities, it is important to identify the factors and measures which can help workers achieve balance in work-family responsibilities. To this end, it would be useful to subsequently conduct more detailed econometric analyses in order to identify the explanatory factors behind the impact of work-family balance measures.

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HUMAN CAPITAL: PRODUCTIVE BENEFITS AND LABOR COMPETENCES

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ABSTRACT

It is widely argued that intangible assets, specifically human capital, are vital to business sustainable growth and differentiation. Thus, extensive research has been conducted on the relationship between human capital, strategy and performance. In this paper, a process to identify the human capital critical competences and to measure their economic benefits/impact is introduced. A total of 40 manufacturers located in San Cristobal-Venezuela were included in this study. From these businesses, 167 lathe/turning machine operators were initially observed and a sample group of sixteen workers across four categories (expert, professional, apprentice and assistant) were analyzed to model their core competences and economic contribution. Evidence suggests that mapping human capital competences with corporate strategies allow businesses to make better decisions in terms of human capital investment, and cost reduction.

INTRODUCTION

The transformation from an industrial-base economy to a knowledge-base economy requires business to allocate greater attention to intangible assets. Human resource scholars widely argue that human capital is among to most important intangible assets and an important source of value generation and of sustainable competitiveness (Becker, Huselid and Ulrich, 2002). However, many organizations face a twofold barrier. First, in many instances, organizations do not have a clear and objective identification of their core human capital competences (aptitudes, knowledge, abilities, etc). That is, an organization has not properly identified which knowledge, aptitudes and abilities are vital to compete effectively and sustainable. Second, organizations often lack a model to objectively and accurately measure the impact of its core human capital competences, "*worker's know-how*" in its manufacturing, market, and financial performance.

Thus, in this study a model to identify and measure such competences is developed for a group of manufacturing companies located in San Cristobal-Venezuela and for a specific processing task, lathe/turning machine operators. The remainder of this article is structured as follows. In section two, a discussion of relevant literature is provided. In section three, the methodology is discussed. In section four, the study results are presented. Finally, section five provides the concluding remarks.

LITERATURE REVIEW

Miller and Wurzburg (1995) introduced a model for "investing in Human Capital." This model has since then being used by many human resources scholars. Miller and Wurzburg raised a vital question, how do we measure human capital in a constantly changing economy? They focus their study primarily on the obstacles to measure the productivity and the value of employee's education. Miller and Wurzburg (1995) argue that learning increases adaptation and constitutes a critical element for business survival and individuals' employability. They claim that "spite of the importance of workers knowledge and skills such as behavioral factors, the methods to measure them not only are notoriously crude, they are also rigidly determined by the institutions that certify them" (p.16).

Miller and Wuzburg (1995) argue that business that intensively use knowledge and skills are faced with three barriers: "(1) *lack of clarity of its labor costs,* in particular those incurred to improve worker's aptitudes; (2) *difficulty in measuring productive capacity,* knowledge, skills and abilities that the workers acquire through training and hands-on experience; (3) inability *to estimate the economic value of aptitudes,* and the enterprises ability to capitalize on the benefits provided by worker's improved aptitudes. That is, businesses are unable to state the "human capital' value in the income statement and balance sheet. They added that unsophisticated means of measuring the value of human capital may lead to incorrect allocations; thus they concluded that organizations need to precisely define their labor costs and measure their employees' competences systematically. This study seeks to identify and define the barriers. Then, provide a systematic model to identify and evaluate human capital for a group of manufacturing companies located in San Cristobal-Venezuela and for a specific processing task, lathe/turning machine operators.

Two additional theories are of interest in this research project, the theory of resources and capacities and the theory of the human capital. The theory of resources and capacities considers businesses as an organized and unique collection of tangible and intangible resources (Wernerfelt, 1984, Carrión and Ortiz, 2000). Each business is formed by a unique combination of resources, which explains its heterogeneity. For a business or enterprise, the resources and capabilities that are difficult to imitate by the competitors are vital to gain sustainable competitive advantages (Grant, 1991, Carrión and Ortiz, 2000). Thus, one may argue that some tangibles assets are easy to imitate whereas intangible assets, e.g. know-how, are perhaps to the most difficult ones to imitate or replicate, and thus intangible assets are closely related to the value of a business (Carrión and Ortiz, 2000). Developing a systematic and precise model to measure human capital, a vital intangible asset, is critical to the survival of any enterprise.

Theodore Schultz (1971), an economist and Novel Prize Laureate, first coined the terms "human capital". He pioneered this line of research and emphatically argued that economic growth depended on "human capital" and that improving the welfare of the poor did not depend on the land or assets, but on knowledge. Fitz-enz (2003) discusses Schultz description of human capital as:

> *"It is necessary to keep in mind all the human capacities, innate or acquired. Each person is born with a specific set of genes, which determines its innate capacity. The acquired attributes, which have value and can be increased through an appropriate investment, will be considered as human capital" (Schultz, 1981, p. 21).*

Becker et al (1964), also an economist and Nobel Prize laureate, devoted a great deal of his work to the concept of the human capital. Becker studied the so-called societies of knowledge and concluded that their greater treasure was the human capital, that is, the knowledge and the abilities of their people, their health and their work ethics. He also defined human capital as important to the productivity of the modern economies, since productivity is based on the creation, diffusion and use of knowledge. According to Becker et al (1964), human capital is the set of productive capacities that an individual acquires by accumulating general or specific knowledge. The notion of capital includes the idea of an immaterial stock possessed by one person that can be accumulated and used. Thus, labor competences are an important part of business entity. Human capital theory provides the basis for the following concepts.

The Human Capital Component of Intellectual Capital

Intellectual Capital is the ability to transform knowledge and other intangible assets into wealth generation for both enterprises and countries (Meroño and Sabater, s/f)). Edvinsson and Malone (1998) defined intellectual capital as "the possession of knowledge, applied experience, organizational technology, relations with clients and professional skills that provide an organization with a competitive advantage in its market". Different models exist for intellectual capital that are based, in essence, on

classifying and grouping in a comprehensible scheme each one of the intangible elements that generate or will generate value for the enterprise. The "Intelec Model" is the first Spanish contribution to measure intellectual capital (Euroforum, 1998). The model is structured in three blocks, elements or indicators: Human Capital, Structural Capital and Relational Capital. Human Capital includes the actual competences (knowledge, abilities and attitudes) and the capacity of the people to learn and to create.

Relationship between Human Capital and Work Competency

Work competency can be defined as a worker's capacity to meet and/or exceed a job's requirements or as one's self-image, social role, or a body of knowledge that an employee uses to successfully perform a task (Boyatzis, 1982). These personal characteristics are predictors of excellent performance and are associated with critical behavior (Hay Group, 1996). The Consejo de Normalización y Certificación de Competencia Laboral (CONOCER), (1998) defines Work Competency as the individual's ability to perform a productive task in the same manner. Thus, characteristics such as aptitudes, knowledge, and abilities, among others can be used to approximate human capital and to estimate its value or wealth generation.

Competency Model -Human Capital Approximation

Competency identification is an organization specific task. The organization must identify a set of real, observed and "desirable" behaviors that result in successful performance of a task or job. This profile will generate wealth for the organization. According to Hay Group (2004), a competency model is a complex group of competences related to the challenges and objectives that are pursued in the position or role within an organization. These competencies are interrelated to each other and reflected in the success of the organization. A competency model can be defined for an entire organization, for a division or for a specific role or given job.

METHODOLOGY

Due to the scope of this research project, the methods used were essentially descriptive, and "correlacional" and range from qualitative and quantitative analysis. A qualitative inquiry was used as a naturalistic approach to gain in-depth understanding of phenomena (situation, behavior) in context-specific settings and to possible extrapolates to similar situations (Patton, 1990, Hernandez at el, 1998). Qualitative research is widely argued to be an effective research method when one needs to first identify the variables which will later be tested quantitatively (LaPorte, 1997). Quantitative methods were use to measure the economics impact of the selected workers' competences.

The study was conducted in San Cristobal, Venezuela. Forty for-profit manufacturing companies, classified as lathe-mechanical, were selected for this study. To gain an in-depth understanding of the manufacturing process and thus identify the nodal, or critical task, 167 machine operators were observed within their natural workplace settings (See table 1. It was determined from this population that the lathe/turning machine operators performed the nodal within the manufacturing process. Thus workers' competencies were defined as the independent variable and manufacturing cost as the dependent variable.

Table 1: Study Sample Group

TOTAL BUSINESS ANALIZED	TOTAL WORKERS OBSERVED
First generation Lathe-mechanical shops in San Cristobal, Venezuela metropolitan area	Machine operators at first generation Lathe-mechanical shops in San Cristobal, Venezuela
40	**167**

Source: Aguilera (2005)

A census was conducted to identify the stages and critical roles, as well as the indicators of performance of the production process for the lathe mechanical enterprises. Using direct observation of operators in the 40 enterprises, the research group was able to determine common elements within the production processes. In order to generate a suitable competency profile required within the production process, a functional analysis was used on the entire sample (40 enterprises) in consultation with experts.

First, it was determined how many of the 167 workers were lathe operators. That is, operators who performed the lathed tasks that were considered as nodal or critical. A total of 45 lathe operators were identified. Then, owners or shop managers decided which of these operators were considered experts (those having excellent performance). Seniority, 10 years or more in the job, and task proficiency were among the criteria used to classify the workers. According to the shop managers, eight workers met these criteria. Due to conflicting work schedules, some of 16 experts were unable to participate on the next stage of the research project. Thus, a panel of experts comprised of three of the expert operators and two managers with ten years or more of work experience were selected.

A panel of experts, according to Hay Group (1996), has as an objective to transform the challenges of the organization into the required behaviors. The panel of experts will use their knowledge, experience, and available information to determine the individual characteristics that an employee must have in order to perform an assigned task or role with excellence. The experts are generally executives, managers, supervisors and people that know the position or role deeply.

In order to measure the impact of different levels of labor competences in the production process performance, a pre-identified variable from the defined population was selected to discover "predetermined response categories" (Patton, 1990, p 14, Méndez, 1998). Four enterprises had lathe operators in the four levels of competence (expert, professional, apprentice and assistant) for a total of sixteen (16) machining workers of (four levels by enterprise). These individuals were used as the sample to measure the performance indicators.

RESULTS

Detection of Labor Competency in the Production Process

In order to identify the required labor competences to perform a specific production process, functional analysis and an expert's panel was used. CONOCER (1998) argues that functional analysis is the identification of relevant variables breakdown or disintegration into a logical ordering of the production functions of the enterprise. Figures 1 presents a map or results of the functional analysis. Figure 1 shows the production functions necessary to fulfill the main objective of the lathe-mechanical enterprises. It is important to emphasize that through this analysis it was detected that the nodal or the critical area for the lathe-mechanical enterprises is the machining or lathe operations. The machining operations are composed of four sub-areas nominated units of competences. The panel of experts determined the responsibilities, challenges, and behaviors shown on Figure 2. The Table 2 shows the required competency profile for the lathe machine operator using functional analysis and a panel of experts.

Table 2**:** Competency Profile for Lathe Machine Operator.

No	COMPETENCY
1	Capacity to analyze product blueprints or samples to establish the necessary work process, equipment, tools needed
2	Capacity to layout the manufacturing flow and productive process in accordance with established specifications, work method and relevant parameters.
3	Capacity to carry out preliminary operations: selection of draw pieces, cutting and sharpening of tools, reading diagrams, optimization of materials.
4	Capacity to prepare the machines and tools needed.
5	Capacity to adjust tools and parameters to meet technical specification, processing time, quality standards and safety requirements
6	Capacity to place parts properly on the machine to meet security and quality standards
7	Capacity to operate machinery or chip machines to meet quality and safety standards
8	Capacity to determine if finished part meets benchmarking and tolerances requirements, and to recover or eliminate those that do not meet the specifications.
9	Capacity to verify the functionality, quality, precision and coupling of the finished part or project based on engineering specifications.
10	Capacity to take responsibility for his/her performance.
11	Capacity to reduce uncertainty by means of controls and validation
12	Hold himself/herself to higher standards of excellence, constantly seeking training to improve on existing standards of excellence
13	Genuine care for the need of internal (co-workers) and external customers (clients), carefully listen to their needs, and seek to find way to satisfy them.

Figure 1**:** Functional Map of Lathe-Mechanical Enterprises

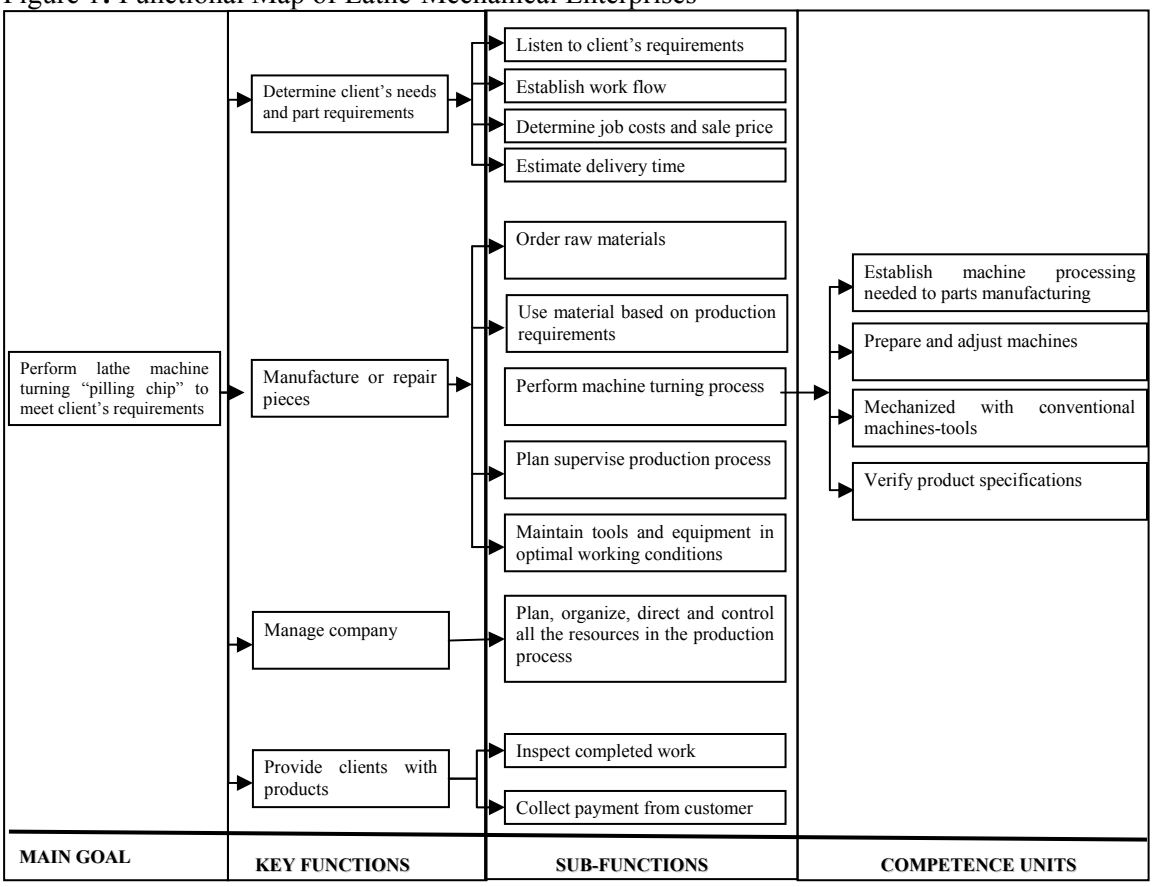
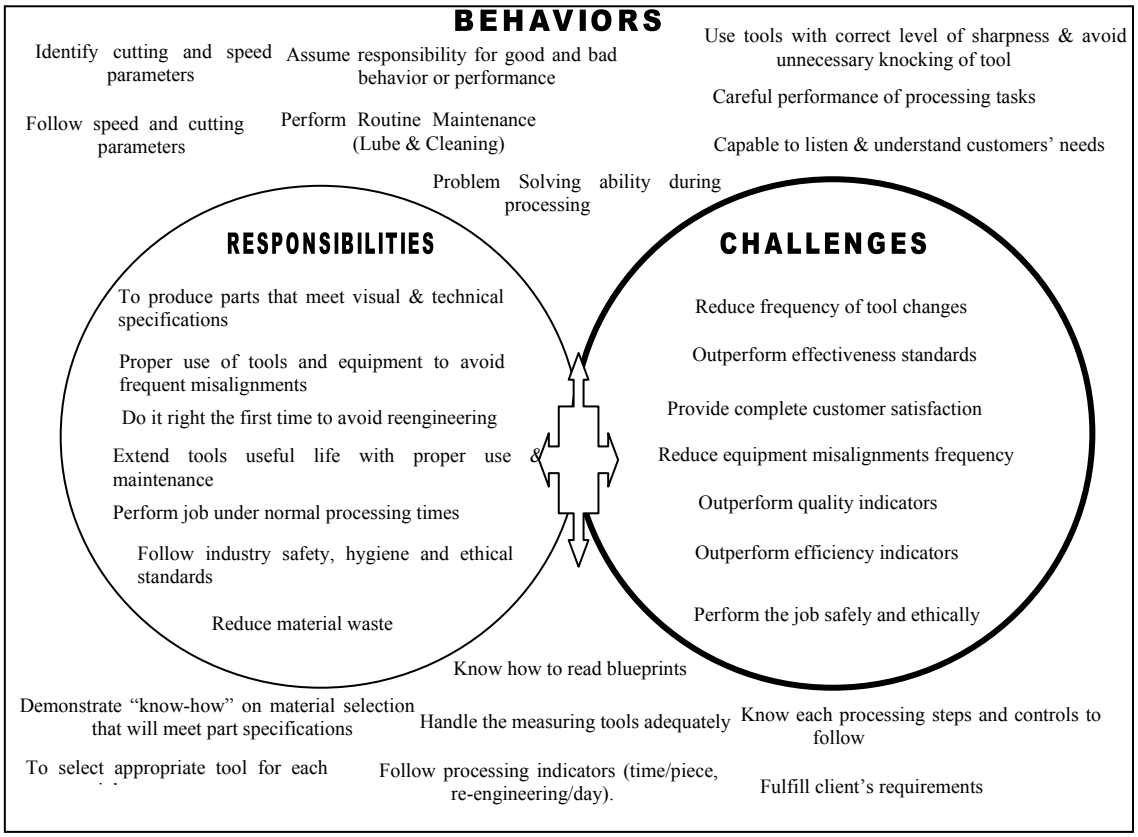


Figure 2: Challenges, Responsibilities and Desirable Behaviors for Lathe Machine Operators



Generation of a System of Indicators Related to the Competency Profile

Competency profiles provide a list of desired behaviors for a particular task or job. However, in the workplace, one may observe individuals with various degrees of such desired behaviors. Thus, a system of indicators will facilitate measuring the impact of diverse competency levels. Besides, measuring the individual's performance during the production process, a system of indicators will measure organizational factors such as efficiency, effectiveness and efficacy (Beltrán, 2000). The indicators of performance for lathe machine operators are showed in Table 3.

Relationship between Indicators and Competency Profile

In order to measure the identified indicators, it was necessary to evaluate the workers competencies at the specific task; thus a performance evaluation form was designed using the competence identified on table 2 as basis. Table 4 shows a sample section of the form related to the first competence from Table 2. This process is repeated for each of the identified competences.

Table 3: Indicators of Performance for Machine Turning Operator.

DIMENSION	INDICATOR	FORMULA
Efficiency	Used time/piece	Measure production time from beginning to end
	Productivity	Total of processed pieces / Total expected pieces
Effectiveness	Number of reprocess	Number of times that a part must be reworked to meet specifications
	Percentage of defects	Number of pieces that do not meet specifications / Total number of pieces processed per unit of time
	Percentage of scrap	Waste materials or material used to redo a piece/ Total material assigned to a part production.
	Cutting tool change frequency	Useful life of cutting tools for a particular worker
	Frequency of equipment misalignment	Number of times the equipment is misalign or out of order
Efficacy	Percentage of parts that met specification	Number of perfectly complete parts / Total number of parts manufactured in a specific time frame
	Percentage of delivery time met	Number of times where actual delivery time meets estimated or project delivery time/ Total number of customers assisted in a specific time frame.
	Customer perception of service provided	Customer qualitative assessment of service provided.

Table 4: Example Questions from the Instrument Used to Evaluate Competences

From a manufacturing diagram and engineering specifications identify shape, cuts, slices and sections needed for a piece or a sets; determine dimension tolerance, surface finish; identify material characteristics, and dimensions for raw piece(s) and finished piece(s).	
Perform the tasks independently and with expertise	□
Perform as routine work	□
Demonstrate theoretical but not practical knowledge	□
Doesn't know how to perform the task	□

A certain level of competency is needed to perform a task. As indicated earlier, there are different levels of competency or mastering of a specific task. Thus, it is important to control for such differing levels (Le Boterf, 2001). Thus, a group of individuals who demonstrated each of the different competency levels were identified. Table 5 shows four levels of competency found for lathe machine operators.

Table 5: Competency Levels for Lathe Machine Operator

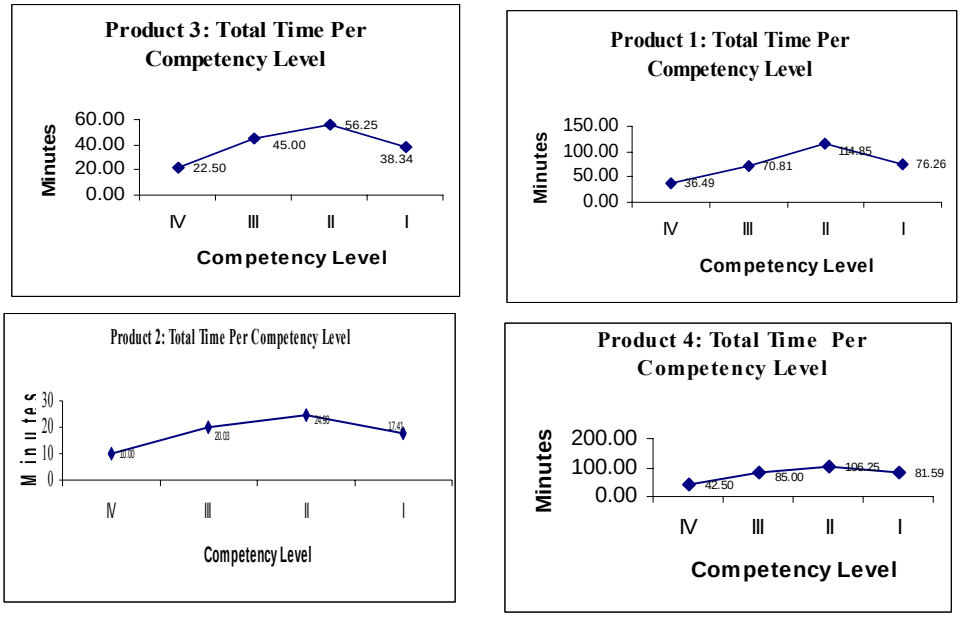
LEVEL	DESCRIPTION
IV	Expert: perform all required processing tasks skillfully and independently.
III	Professional: perform all required processing tasks skillfully, but requires supervisor's assistance form time to time.
II	Apprentice: possess the theoretical knowledge of the production process but lacks practical knowledge; requires constant coworker's or supervisor' assistance. New technical school graduates or Instituto Nacional de Capacitación Educativa (INCE) graduates are included in this category.
I	Assistant: lacks practical and/or theoretical knowledge of the job of machining; supervisor performs the required processing tasks while the assistant observe and learn.

These four levels of competencies were associated with the competency profile (Table 2) and the indicator of performance (Table 3) to determine the time require to perform the lathe machining per type of competency level for four products. Table 6 shows the products analyzed and Figure 3 shows the time required for product one (P1).

Table 6: Products Included in the Study

PRODUCT	CODIGO
Solid Pin (2" x 30 cm) Steel 1006 *Pasador Macizo Ø 2" x 300mm, ACERO 1060*	P1
Axle part for a Volvo bus b10m *Aro soporte estopera tren trasero (autobús volvo b10m)*	P2
Part for a John Deere Backhoe (2"x 40 cm) *Pasador cesto retroexcavador Johan Deere (Series 310,410)* Ø 2" x 400mm. Longitud	P3
Part for a wheel -loader caterpillar 950 (2.5" x 2" x 4") *Cojinete BrazoPrincipal Pay Loader Caterpillar 950* *(Ø ext. 2, 5"x Øint. 2" x 4 pulg)*	P4

Figure 3: Total Time Required to Manufacture a Piece Based on Competence Level

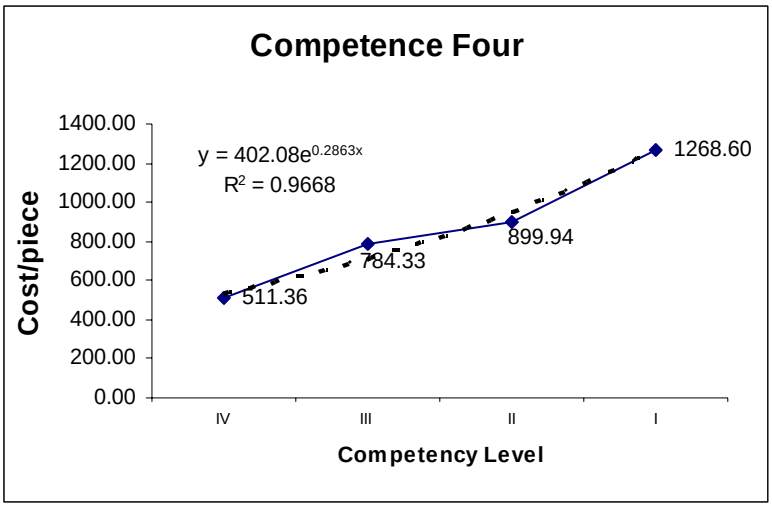


The Human Capital and Quantification of Its Economic Contribution

Each competence level has a direct impact on processing time. Simultaneously, processing time has a direct impact on labor cost, product quality, reprocessing cost, and maintenance cost. Figure 4 shows the relationship between competency levels and production costs. Figure 3 demonstrates that the impact of the competency level on processing time is the same across products. Thus, to measure the actual impact on production costs, the manufacturing process of a solid pin with dimension 2" wide x 30 cm long made of steel 1060 will be used. Direct and indirect labor costs for four manufacturing companies and across all four competency levels and for all competency profile tasks were obtained. Figure 4 shows the

relationship of processing time per unit of production per competence level for competence four (capacity to prepare the machines and tools needed in the production process). The findings are that higher competency levels lower processing costs.

Figure 4: Impact of Competence Four "Capacity to Prepare Machines and Tools Needed in The Production Process" in Lathe Machine Operator Labor Costs.



Next, direct and indirect labor costs for competence one through nine (see table 2) were computed by competence level to arrive to the total cost to produce one part or piece or solid pin steel 1060. Figure 5 illustrates the results for a solid pin made of steel 1060.

Figure 5: Impact of Competency Level on Lathe Machine Operator Labor Costs

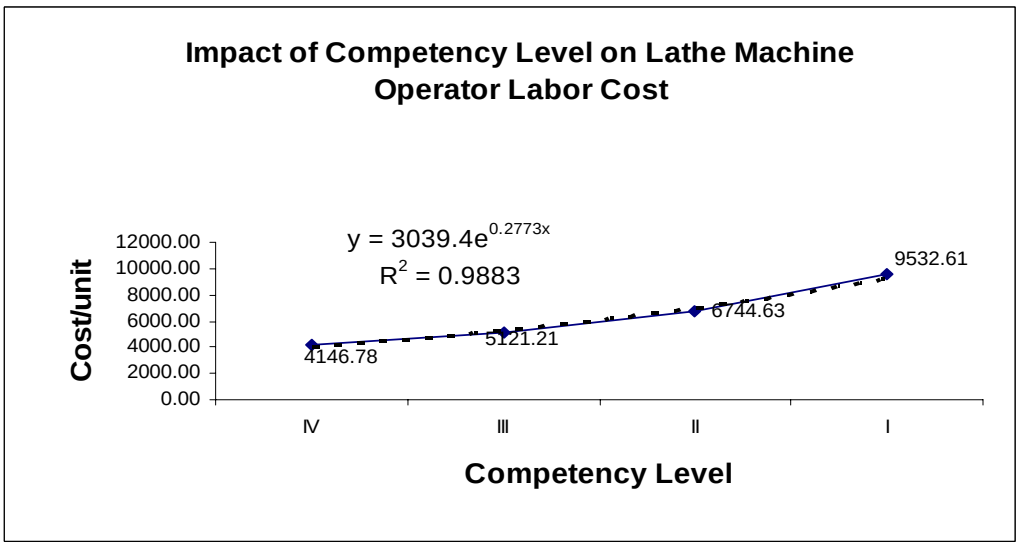


Table 7 summarizes the impact of each competence level on processing time, and labor cost. If a processing task for a worker classified as a professional is compared to that of an apprentice, it can be inferred that an expert processes the part 38% faster than an apprentice. This results in a 24% reduction on labor cost. If a processing tasks for workers classified as an expert is compared to that of a

professional, it can be inferred that the expert processes the part 48% faster than a professional implying a 19% reduction on labor cost. Thus, one may argue that training processing workers to become a professional or expert machine operator will have a significant impact on labor costs and consequently manufacturing costs.

Table 7: Processing Time and Costs Reduction by Level of Competency for a Lathe Machine Operator

	Expert		**Professional**	
	Processing Time Reduction	Labor Cost Reduction	Processing Time Reduction	Labor Cost Reduction
Professional	48%	19%		
Apprentice	68%	39%	38%	24%

For comparison purposes, it is assumed that a product price is a function of the cost of the least skillful lathe machine operator. In this case, the least skillful operators are assistants for specific parts, and apprentices for generic ones. Thus, the Ratio de Ganancia por Tipo de Competencia Para Competencias Especificas ($RGTC_{CE}$) or the Ratio of Gain per Type of Competence for Specific Competency and another for a Generic Competency ($RGTC_{CG}$) are estimated. $RGTC_{CE}$ takes labor costs into account and $RGTC_{CG}$ takes reprocessing time and cutting tool cost into account. Tables 8 illustrates the impact in overall cost.

$$RGTC_{EC}(\text{Apprentice}) = \frac{9532.61 - 6744.63}{9532.61} \times 100 = 29\%$$

$$RGTC_{GC}(\text{Expert}) = \frac{13473.92 - 1457.58}{13473.92} \times 100 = 89\%$$

Table 8: Ratio per Type of Competency Level for Lathe Machine Operators

Related Costs	**Levels**			
	Expert	**Professional**	**Apprentice**	**Assistant**
Labor Cost (Bs.)	**4146,78**	**5121,21**	**6744,63**	**9532,61**
$RGTC_{SC}$	57%	46%	29%	0%
Reprocess Cost (Bs.)	1303,03	3366,48	12043,62	------
Cutting Tool Cost (Bs.)	154,55	460,61	1430.30	------
Total Costs for Generic Competences (Bs.)	**1457,58**	**3827,09**	**13473,92**	**------**
$RGTC_{GC}$	89%	72%	0%	------

As stated earlier, competency level has a significant impact on labor cost, cutting tool costs, and reprocessing cost. Thus, the total impact of a competency level on processing costs per piece or part can be approximated. Figure 6 shows cost behavior at different competency levels.

If a constant unit sale price is assumed, and if the tasks are assumed to be performed by an assistant, one may argue that lathe manufacturing companies will have a higher profit margin when a part or unit is processed by an expert worker. The profit ratio increases as expertise increases, approximately 76% ((23006-5604) /23006) *100) in this example. Figure 7 illustrates the cost contribution of human capital if managed and trained properly.

Figure 6**:** Competence Level Impact on Cost per Unit Manufacture

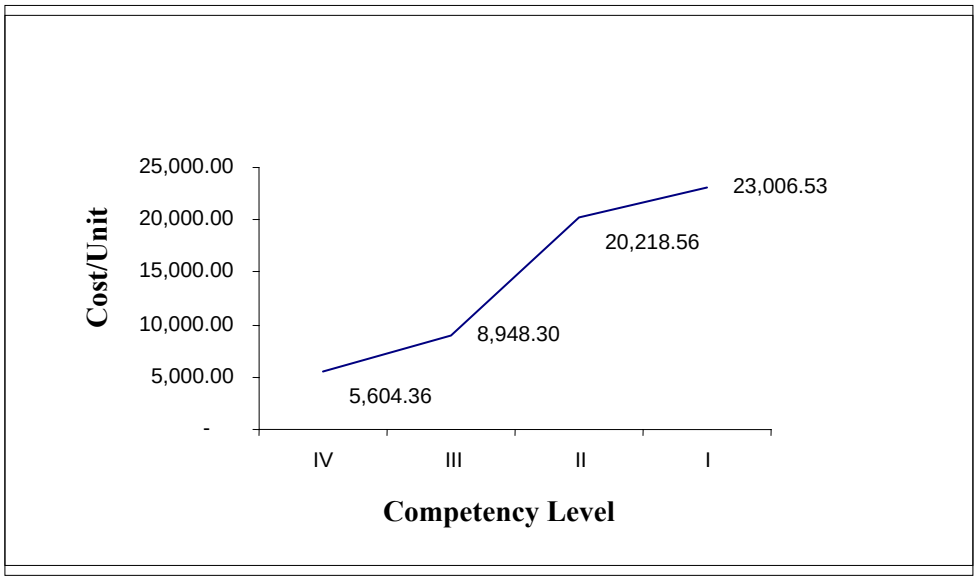
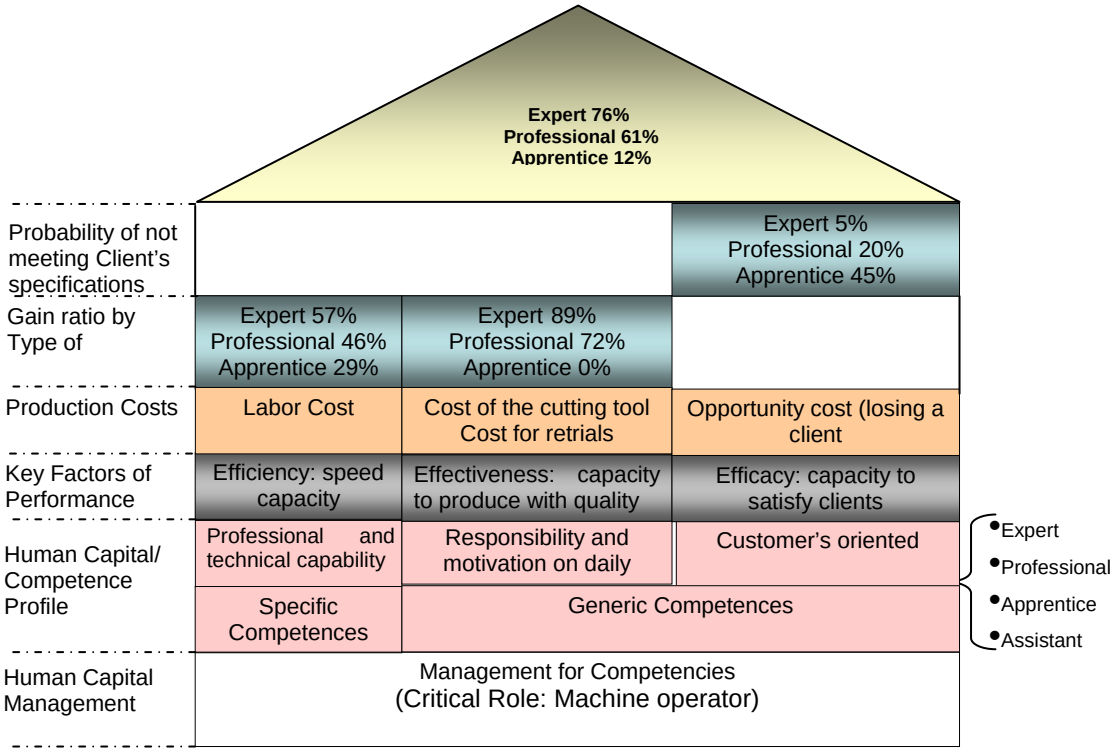


Figure 7: Approximation of the Impact of the Labor Competences on Costs for Lathe-Mechanical Manufactures.



CONCLUSION

This study provides an approximation of human capital contribution in terms costs and labor competencies. This study provides a framework or methodology to quantify Human Capital contribution to the organization profit margin. Future research should more accurate determine the benefit of human capital, and a return on investment should be considered. Further research is also needed in other functional and productive areas of this and other business. This study provides a framework or methodology to quantify Human Capital contribution to the organization profit margin.

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THE ATTITUDE OF SMALL AND MEDIUM INDUSTRIALISTS TO VENTURE CAPITAL FINANCING IN NIGERIA

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ABSTRACT

The principal objective of this paper is to ascertain the extent to which Myers' Pecking Order Theory (POT) of business financing explains the financial structure of Small and Medium Manufacturing Enterprises (SMEs) in Nigeria. The goal is to examine their attitude with regard to the venture capital financing known as Small and Medium Enterprises Equity Investment Scheme (SMEEIS) introduced by the government in 1999. The data employed were from the database of the survey of manufacturing SME's in Nigeria. The findings provide evidence suggesting Pecking Order financing behavior is prevalent among manufacturing SMEs in Nigeria. A small proportion of SMEs that consider equity financing for both business start-up and expansion is found. Hence, equity financing through venture capital has not become as popular as other financing alternative in Nigeria. Debt financing appears to dominate their preference, apart from their personal saving and retained earning. Consequently, the paper suggests policy formulation that will address the mindset of the people and encourage greater commitment of banks to actually undertake promotional activities. Among such activities suggested are the identification, development and packaging of viable industries with enterprising customers, and readiness to provide the complementary services to ensure their success.

INTRODUCTION

In response to limited access to capital by Small and Medium Enterprises (SMEs) in Nigeria, the Central Bank of Nigeria (CBN) adopted an innovative method of financing SMEs through equity financing (that is, venture capital). This action was taken in response to a finding that debt financing was not able to appropriately bear the huge risks that are associated with start-up of SMEs in Nigeria (especially those in the manufacturing sector). Empirical studies have even shown that the incidence of extra outlays required to compensate for deficiencies in the supply of basic utilities (especially in developing countries like Nigeria) is relatively heavier on SME's than large enterprises (Udechukwu, 2003). While such extra investments account for about 10 per cent of the total cost of machinery and equipment of large enterprises, it represents about 20 per cent of that of manufacturing SMEs because of the absence of economies of scale. Moreover, unlike buying and selling, manufacturing SMEs have a long gestation period, which may extend into several years. Therefore, there was a need for more accessible financing for manufacturing SMEs, especially long-term funding, to avoid a fatal mismatch between project gestation and loan maturity.

Consequently, the Bankers' Committee, comprising of all the banks' Chief Executives and CBN, adopted the new initiative in 1999, called the Small and Medium Industries Equity Investment Scheme (SMIEIS), later changed to Small and Medium Enterprises Equity Investment Scheme (SMEEIS). This requires all commercial banks in Nigeria, which make a profit in any financial year, to set aside 10 per cent of their profit before tax (PBT) for equity investment and promotion of SMEs. This funding, to be provided in the form of equity investment in any SMEs that meet guidelines set out by the Committee, will reduce the burden of interest and other financial charges expected under normal bank lending, as well as provide financial, advisory, technical and managerial support from the banking industries (CBN, 2002).

Equity financing of SMEs (through venture capital) is a relatively new tool in economic development, and is largely a response for the failure of many SME lending programs intended to meet the full needs of SMEs' start-up and growth. Most importantly, in an economically depressed environment such as Nigeria, SMEs need more than capital. They also need highly focused, on-going assistance, particularly in a variety of areas including marketing, equipment sourcing and financial controls. But given the absolute limitations of interest rate-based returns, traditional bank lending generally cannot afford, and are not suited to provide such assistance. Therefore, by contrast, an equity investor, as an intimate partner with any investing business, can work with the entrepreneur to address problems and opportunities in the above crucial business areas.

Inspite of this innovative and world-wide financing option, the attitude of Nigerian small and medium scale industrialists to the fund, vis-a-vis foot-dragging by Nigerian banks to invest in SMEs, left much to be desired. This could be seen in the amount of money in the fund which had been invested in the SMEs since its commencement in 2000. Out of a total amount of ₦38.34 billion set aside by eighty two (82) banks as of September 2005, only about ₦10.54 billion (representing about 27.5 per cent of the total amount set aside) was reported invested by fifty six (56) banks in 173 SMEs projects (CBN, 2006).

The principal objective of this paper is to ascertain the extent to which the perceived attitude of the small and medium industrialists to this new financial structure financing in Nigeria, is explained by the Myers' Pecking Order Theory (POT) of financing amongst the manufacturing SMEs in Nigeria. Based on the foregoing objective, the paper seeks to address the following questions: 1. How valid is the Pecking Order Theory to the SMEs in Nigeria? 2. What is the general attitude of SME operators to venture capital financing? 3. What are the challenges of operationalizing the venture capital financing through SMEEIS in Nigeria? In effort to achieve this, the paper is divided into five sections. Section 1 is the introductory part, section 2 establishes the theoretical framework of equity financing in manufacturing SMEs and the prior research on the POT (as it applies to SMEs). The research method is outlined in section 3, thereafter; the findings of the research are presented in section 4, followed by a section containing some concluding comments.

THEORETICAL FRAMEWORK Of EQUITY FINANCING IN MANUFACTURING SMEs

A number of articles examine the extent to which theories of financing appear to explain the financial structure of business concerns. Pettit and Singer (1985) argued that business firms of all sizes select their financial structure in view of the cost, nature, and availability of available financial alternatives. They also posit that the level of debt and equity in a small firm likely a function of firm and manager. Levin and Travis (1987) provide support for this view, suggesting that in a private corporation, leverage theory does not always apply. Hence, the owners' attitude towards personal risk determines the amounts of debt and equity that are acceptable.

McMahon Holms Hutchison and Forsaith (1993) reasoned that given the initial failure of modern finance theory to provide normative and practicable guidance on making financial structure decisions in business generally, and particularly in small enterprises, a positive theory is necessary. The absence of a widely accepted normative theory of financial structure for business enterprises thus led to the theory of business financing provided by Myers (1984), which is known as Pecking Order Theory (POT). In summary, the theory states that businesses adhere to a hierarchy of financing sources and prefer internal financing when available. If external financing is required, debt is preferred over equity. POT has become one of the more popular theories of capital structure. Information asymmetries suggest that external financing is more expensive than internal financing. Financiers add a risk premium to cover their information disadvantage. Signaling theory supports a preference for debt over equity if external financing is sought. Agency problems also increase the cost of external financing as monitoring and bonding costs are incurred in the process of seeking external financing.

Scherr, Sugrue and Ward (1993) and Hall Hutchinsom and Michaelas (2000) apply the POT to the capital structure of SME's. They argue that the closed nature of SMEs makes information asymmetry and agency costs more onerous than for other firms. This accentuates the pecking order theory pattern for SME financing decisions. Suggesting that theoretically, small enterprises as a whole would prefer internal financing, as external financing is either more costly or more difficult to obtain due to the impacts of bankruptcy costs, monitoring or other agency costs and greater information asymmetries (Pettit and Singer, 1985).

The rationale for SMEs owners financing decisions may be somewhat different from those of larger enterprises, even if the pattern is consistent with the prescriptions of the pecking order theory. The strong desire for control on the part of most SME owners makes the preference for internal finance and the aversion to external equity finance, in particular, much stronger for SME financing decisions than for larger enterprises (Holmes and Kent, 1991). The application of the pecking order theory to SMEs is, therefore, somewhat constrained. Ang (1991) argued that in order of preference, new equity contributions from the owners of a small enterprises' rank just behind retained earnings and ahead of debt financing. SMEs may also prefer debt to equity when seeking external funding because they are more familiar with banks and other sources of debt financing (KPMG Consulting, 2002).

The stage of the firm's life-cycle on capital structure was examined by Scholten (1999) by applying the pecking order theory to SME financing. It was noted that younger firms, which are generally smaller firms, are less likely to generate sufficient retained earnings from internal sources to adequately finance an expansion of operations. This is because retained earnings are more readily available for more mature firms; hence capital structure will vary over the life cycle of the small enterprise (Ang 1991).

An additional factor impacting the financing structure of SMEs is the limited availability of certain sources of funding to SMEs. External equity finance in the form of venture capital is generally unavailable to SMEs without strong growth prospects. This includes both venture capital funds and wealthy individual investors known as business angels. Widespread access to external equity through public listing on a stock exchange is unavailable until the firm is relatively large and is able to meet the minimum size listing requirements. For most SMEs, the only feasible source of external equity funding is from relatives and friends. This further constrains the applicability of the pecking order theory to SMEs.

However, on the other hand, some authors suggest that, since the SMEs sector is mostly a heterogeneous sector, it may be difficult sometimes to generalise POT across all SMEs. Barton and Mathews (1989) emphasized that the management structure of the SMEs can affect the capital structure decision. Certain authors found that capital structure in some SMEs depends on the risk-taking propensity and objectives of the owner-managers and on the responses of potential funding providers to the special circumstances and requirements of the owner-managers (McMahon *et al*, 1993). Matthews Vasudevan Bartan and Apana (1994) argued that small enterprise owners have a range of different attitudes towards debt financing depending on their risk propensity, desire for control, experience and wealth.

Additional sources of finance availability to growing SMEs, coupled with the different objectives and aspirations of the owners of these enterprises, may lead them to make different financing decisions from the traditional SME which has, at most, capped growth objectives. In particular, growing SMEs may take no more external equity finance and may be less highly levered than many non-growth enterprises (Forsaith and McMahon, 2003).

The desire for growth, in some SMEs was also identified by some authors, explains capital structure. They find that many small enterprises forego growth when this would lead to loss of control (Hakim, 1989; Davidson, 1989). Cressy and Olofsson (1997b) found that aversion to new owners in incorporated

firms in Sweden was stronger in manufacturing firms than in the services sector and was even present amongst growth aspirants. Cressy and Olofsson (1997a) also noted that firms with limited or no growth aspirations are unattractive to providers of equity capital as they would not offer the rates of return required by investors.

The foregoing arguments suggest that internal equity, through capital contribution and retained earnings, is expected to be the major source of SME funding. Meanwhile, external equity is relegated to a minor role. Non-growth SMEs avoid growth, and growth SMEs, comprising a small minority, may be unable to attract as much external equity as they might want, thereby limiting their growth potential.

Prior Research on Pecking Order Theory (POT) for Manufacturing SMEs

Initially, the POT sought primarily to explain the observed financing practices of large publicly traded corporations. However, in time researchers recognized that the theory is also applicable to the financing practices of non-publicly traded SMEs that might not have the additional financing alternative of issuing external equity finance. Scherr *et al*. (1993) considered the POT to be an appropriate description of SMEs' financing practices, because the Pecking order hypothesis suggests that debt is by far the largest source of external finance for small businesses. Holmes and Kent (1991) noted that in most SMEs, Managing Directors are usually the owners of the business; hence they do not normally want to dilute their ownership claim. Thus, the issue of external equity financing, and the consequential dilution of ownership interest, may be further down the pecking order. The theory's application to SMEs implies that external equity financing issues may be inappropriate. In relation to the owner-manager's control over operations and assets, if the POT holds, then internal equity finance will be preferred, because this form of finance does not surrender control. When external financing is required, obtaining debt rather than equity finance is favored, because this places fewer restrictions on the owner-manager.

Norton's support for the application of the POT to SMEs is evident in his assertion that "contrary to financial theory, factors dealing with bankruptcy costs, agency costs, and information asymmetries play little role in affecting capital structure policy. Rather, the financial officers seem to follow a 'pecking order' in financing their firm's needs" (Norton, 1991). Hall *et al*. (2000) argue that the information asymmetry and agency problems arising between owner-managers and outside investors providing external finance which give rise to the POT are 'more likely to arise in dealing with small enterprises because of their "close" nature, that is, being controlled by one person or a few, related people, and their having fewer disclosure requirements'.

Since the POT is pertinent to both SMEs and large enterprises, the theory may therefore explain the observed differences between SMEs and large enterprises' financial structures. Holmes and Kent (1991) explain that the application of the POT to SMEs is constrained by the following two factors:

(i) Small firms usually do not have the option of issuing additional equity to the public.
(ii) Owner-managers are strongly averse to any dilution of their ownership interest and control. This is in contrast to the managers of large firms who usually only have a limited degree of control and often have limited, if any, ownership interest, and are therefore prepared to recognize a broader range of funding options.

Fama and French (2000) however reason that there is possibility of modifying the financing pecking order for growing SMEs. This could arise because of owner-managers' attitudes to the option of raising external equity, and to any dilution of their control. Thus, the theory may explain the observed differences between SME's and growth SME's financial structures.

Venture Capital Financing in Developing Countries

In developing countries venture capital funds have become an important source of financing for SMEs, which often have difficulty raising long-term financing because of underdeveloped capital markets (Aylward, 1999). Experience over the years shows that developing countries pose special challenges for venture capital funds because of the weak institutions, and legal and regulatory frameworks which do not adequately support enforcement of contracts with the enterprises in which they invest (IFC, 1997). In addition, many entrepreneurs and smaller companies do not want to give up control and fear the consequences of venture capital investment but are willing to take that step to "grow" their company to the next level (World Resources Institute, 2006).

In spite of the above however, the volume of venture capital finance in developing countries has followed a steeply rising trend in recent years, with longer a history in Asia (Aylward, 1999). The distribution of investment is usually toward expansion and mezzanine financing. Compared to venture capital funds in industrialized countries, venture funds in developing countries are invested, to a greater extent, in private debt securities of portfolio companies**.** According to the study by the International Finance Corporation, the two largest sources of formal venture capital in developing countries are non-financial corporations and banks (IFC, 1997). Also, the consumer goods and industrial products industries are the biggest recipients, and most venture capital investment is in form of ordinary equity.

One challenge, noted by World Resources Institute (2006), is the presence of a strong stock exchange. A strong stock exchange is required for the development of venture capital financing in developing countries The developed stock exchange provides and important exit for a venture capital fund to "realize" their investment gains. Other exit options such as strategic purchases or management buybacks are difficult to structure, detailed and time consuming.

Model of Central Bank of Nigeria Venture Capital

The SMEEIS, which is a development venture fund, is a voluntary initiative of the Nigerian Bankers' Committee. The fund, set aside by participating banks, is to be invested in the form of equity, either in form of fresh cash injection and/or conversion of existing debts owed to participating investment. However, an upper limit of 40 per cent equity funding by banks applies. In addition investment is subject to a maximum amount of ₦200 million in any enterprises. Also, **c**o-investment by different banks is allowed subject to the maximum limit of 40 per cent. The banks may operate the scheme directly through their wholly owned subsidiary venture capital companies or through venture capital companies floated by consortia of banks.

For the purpose of the scheme, a small and medium enterprise is defined as any enterprise with a maximum asset base of ₦500 million (excluding land and working capital), and with no lower or upper limit of staff (however subject to review). To be eligible for equity funding under the Scheme, a prospective beneficiary (SMEs) must be a registered limited liability company, comply with all applicable tax laws and regulations; and engage or propose to engage in any legal business activity, however with the exception of trading/merchandising and financial Services.

RESEARCH METHODOLOGY

The data for this paper were drawn from the baseline economic survey of the manufacturing SMEs conducted in 2004 by the Centre for Industrial Research and Development, Obafemi Awolowo University, Ile-Ife and other universities in different zones in Nigeria. The survey, which was conducted on behalf of Central Bank of Nigeria (CBN), concentrated on the existing manufacturing SMEs in Nigeria. The enterprises were stratified into small and medium scale based on the number of persons

employed. That is, enterprises employing between 10 and 50 persons were regarded as small scale, while those engaging between 51 and 300 persons were considered as medium scale.

The survey employed a purposive sampling of the SMEs engaging in manufacturing activities. Thus, the Manufacturers Association of Nigeria (MAN) classification of manufacturing activities was adopted with some modifications. These include Food, Beverages and Tobacco, Textiles, Wearing Apparel and Leather products, Wood and Wood Products, Pulp, Paper and Paper Products; Chemical and Pharmaceutical Products, Non-Metallic Mineral Products, Electrical and Electronics, Basic Metal, Iron and Steel and Fabricated Metal Products, Motor vehicle and Miscellaneous Assembly, Plastic and Rubber Products, Information and Communication Technology and Solid Minerals/Processing.

Data were collected through self-administered, structured questionnaires containing essentially closed-ended questions designed to cover issues such as the characteristics of SMEs, production inputs and technology, infrastructure, capital and investment, production capacity, cost structure, growth potential and marketing activities, organization and management, and government policy environment. A sampling frame was compiled for each state in each of the zones covered through documents collected from the Commissioners in charge of Chamber of Commerce and Industry, State branches of MAN, Chambers of Commerce, Industry, Mines and Agriculture, and the National Association of Small Scale Industries.

RESEARCH FINDINGS

A total of 6,344 questionnaires were administered to operators of these manufacturing SMEs in the entire country. Out of these numbers, 4,462 completed questionnaires, representing 70.3 per cent, were retrieved. The relevant results to this paper are discussed below. The data analysis employed was mainly descriptive, that is, percentages and cross tabulations.

Characteristics of the Responding SMEs

The survey indicated that most of the responding firms were in business from 1 to 30 years, with mean value of 5 years. Therefore, on the average the responding firms are relatively new. From Table 1, a total number of 4,185 firms were in the small scale category, while 277 were in the medium scale category. Thus, the bulk of the responding firms (93.8 per cent) in all the zones in Nigeria were small scale firms.

Table 1: Distribution of Responding Firms by Major Line of Business and Size

Sector	Small Firms		Medium Firms		Both Firms	
	No	Percent (%)	No	Percent (%)	No	Percent (%)
Food Beverages & Tobacco	1271	30.4	65	23.5	1336	29.9
Textile, Wearing Apparels etc	567	13.5	12	4.3	579	13.0
Wood & Wood Products	815	19.5	34	12.3	849	19.0
Pulp, Paper & Paper Products	107	2.6	20	7.2	127	2.8
Chemical & Pharmaceutical Products	91	2.2	34	12.3	125	2.8
Non-Metallic Mineral Products	55	1.3	4	1.4	59	1.3
Plastic & Rubber Products	54	1.3	32	11.6	86	1.9
Electrical and Electronics.	24	0.6	4	1.4	28	0.6
Basic Metal, Iron & Steel & Fabricated Metals	738	17.6	32	11.6	770	17.3
Motor Vehicle & Miscellaneous Assembly	32	0.8	5	1.8	37	0.8
Information & Communication Technology	45	1.1	4	1.4	49	1.1
Solid Mineral, Mining (Processing)	65	1.6	13	4.7	78	1.7
Other (Specify)	321	7.7	18	6.5	339	7.6
Total	4,185	100.0	277	100.0	4462	100.0

Source: Field Survey, 2004

Table 2 indicates that, in all the zones, the small and medium scale firms were owned mostly by Nigerians (the proportion of Nigerian ownership ranged from 73.8% in North-West Zone to over 95.0 % in other Zones). Table 3 shows that over 40 per cent of the responding manufacturing SMEs were sole proprietorships (family business), while about 30 per cent were limited liability companies, 12 per cent were partnerships and 7 per cent were cooperatives.

Table 2: Analysis of Ownership Structure

Zone	Percentage Ownership (%)	
	Nigerian	Foreign
North-West	73.8	26.2
North-east	99.4	0.6
North-Central	99.4	0.6
South-West	97.6	2.4
Lagos	95.3	4.7
South-south	98.8	1.2
South-East	66.2	33.8

Source: Field Survey, 2004

Table 3: Percentage Distribution of Responding Firms by Legal Status and Major Line of Business in Nigeria

Major Line of Business	Sole Proprietorship	Partnership	Cooperative	Limited Liability	Others
Food Beverages and Tobacco	52.1	10.3	3.8	31.5	2.3
Textile, Weaving Apparels, etc.	49.8	13.9	4.3	29.7	2.3
Wood & Wood Products	47.7	15.7	4.9	29.8	1.9
Pulp, Paper and Paper Products	46.3	5.8	5.3	33.3	9.3
Chemical & Pharmaceuticals	46.4	12.8	4.0	36.8	-
Non-Metallic Mineral Products	36.8	9.1	17.9	29.1	7.1
Plastic & Rubber Products	25.6	8.1	-	58.1	8.2
Electrical & Electronics	41.8	14.0	16.7	27.5	-
Basic Metal, Iron & Steel & Fabricated Metals	45.0	9.1	7.0	30.0	8.9
Motor Vehicles & Miscellaneous Assembly	57.1	17.1	-	25.8	-
Information & Communication Technology	36.3	15.0	3.6	45.1	-
Solid Minerals, Mining (Processing)	40.1	13.6	7.7	38.6	-
Others (specify)	58.6	6.7	4.3	28.6	1.8
Total (Average)	44.9	11.6	7.2	31.1	5.2

Source: Field Survey, 2005

Preference of the Responding SMEs for Start-up Capital

The distribution of the manufacturing SMEs by sources of investment or start-up capital is shown in Table 4. Examination of this table indicates that very small proportion of the proprietors ever gave consideration to equity financing (SMEEIS). Only a small percentage of the small scale industrialists (between 1 and 2 per cent) indicated willingness to source the start-up capital from the SMEEIS fund, while none of the medium scale industrialists ever considered the fund. The exceptions, among the medium scale industrialists, were those from Lagos/Ogun zone. In this zone, 8.5 per cent of the industrialists indicated willingness to use SMEEIS fund. The reason for this could be explained by the industrialists' high awareness of the importance of equity financing. This may be because the zone has the highest concentration of industries in Nigeria and the SMEs associations in this zone are very active in mobilizing and educating their members about the fund.

The major preference of the industrialists (among the small and medium scale) for start-up capital was personal saving (40 – 70 per cent), loans from relatives/friends (12 – 25 per cent), and loans from banks (10 – 20 per cent).

Table 4: Percentage Distribution of SMIs by Sources of Invested Capital Across the Zones

Zone	Source of Invested Capital													
	Small Scale Industry (%)							Medium Scale Industry (%)						
	Personal savings	Loans- friends	Loans-Bank	Loans -Govt. Agency	Funds- SMEEIS	Equipment Leasing	Loans- Cooperative	Personal savings	Loans- friends	Loans-Bank	Loans from Govt. Agency	Funds- SMEEIS	Equipment Leasing	Loans- Cooperative
North Central Zone	70.4	12.9	9.2	2.1	0.6	1.1	4.4	48.7	11.5	5.3	3.8	0.0	0.0	0.0
North West Zone	54.3	7.2	20.8	5.8	1.1	3.0	4.3	34.1	0.0	6.4	15.4	0.0	0.0	0.0
North East Zone	74.6	11.0	6.0	10.7	0.0	0.6	1.3	NA	NA	NA	NA	NA	NA	NA
South West Zone	88.7	2.7	5.4	0.6	0.6	0.6	2.5	51.2	0.0	29.1	3.8	0.0	0.4	0.0
South East Zone	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
South South Zone	57.9	28.3	6.1	2.1	2.2	3.2	4.4	48.1	29.0	44.8	0.0	0.0	9.1	0.0
Lagos/Ogun Zone	48.1	25.4	12.6	0.4	0.3	3.2	7.9	23.3	9.8	33.0	9.8	8.5	4.5	3.9

Source: Field Survey, 2004

Preference of Responding SMEs for New Investible Funds for Expansion

Table 5 shows the percentage distribution of respondents by the sources of investible funds for expansion. The situation was not quite different from their preference for start-up capital. However, within the small scale category, about 24.2, 22.6 and 15.1 per cent of the industrialists from North Central, Lagos/Ogun, and South East zones respectively indicated their preference for SMEEIS fund for expansion. The reason for higher percentages could also be explained by the level of industrialization in these zones. The zones are the most industrialized parts of Nigeria with highly enlightened industrialists and well organized associations. But generally, larger percentages of these industrialists still preferred retained earnings (26 – 72 per cent), followed by loans from banks (11 – 50 per cent) and friends/relatives (5 – 30 per cent).

Enterprise Size and Equity Financing

Taking the two tables together, the data indicated that there is not much difference in the preference of the industrialists, both in the small-sized and medium-sized categories. The finding holds for both start-up and for expansion projects. That is, the majority of small-sized industrialists indicated personal saving as their source of financing for start-up and retained earnings as the source of investible fund for expansion. The same situation applied to the medium-sized industrialists. However, there were a few exception industrialists in the industrialized parts of Nigeria.

Table 5: Percentages Distribution of SMIs by Sources of Investible Funds for Expansion

Zone	Source of Invested Capital													
	Small Scale Industry (%)							Medium Scale Industry (%)						
	Retained Earning	Loan from Friends/Relative	Loans-Bank	Loans -Govt. Agency	Funds- SMEEIS	Equipment Leasing	Loans-Cooperative	Retained Earning	Loan from Friends/Relative	Loans-Bank	Loans -Govt. Agency	Funds- SMEEIS	Equipment Leasing	Loans-Cooperative
North Central Zone	72.4	30.7	50.0	21.4	24.2	21.5	39.8	21.1	1.8	0.0	0.0	1.5	7.7	0.0
North West Zone	16.4	4.4	3.9	0.8	1.6	2.2	1.2	11.3	0.3	2.6	2.6	0.0	0.0	0.0
North East Zone	12.1	6.5	1.5	4.8	0.4	0.4	0.7	NA	NA	NA	NA	NA	NA	NA
South West Zone	79.8	13.6	20.0	4.7	5.4	8.2	24.6	57.8	2.5	4.6	0.1	2.0	8.2	15.0
South East Zone	78.0	25.9	48.1	33.4	15.1	20.0	23.5	10.8	20.7	16.2	36.3	31.1	38.2	38.8
South South Zone	26.5	13.0	11.3	7.6	5.3	0.3	2.6	NA	NA	NA	NA	NA	NA	NA
Lagos/Ogun Zone	39.0	5.7	17.5	0.0	22.6	2.4	3.8	NA	NA	NA	NA	NA	NA	NA

Source: Field Survey, 2004

The findings on the use of venture capital for start-up and/or expansion corroborate the findings of Berger and Udell (1998) for USA and Cressy and Olofisson (1997b) for Sweden. Berger and Udell (ibid) found that angel financing (3.6%) and venture capital (1.85%) were minor providers of funding to U.S.A. enterprises. Also, Cressy and Olofisson (ibid) found that formal venture capital funds were not favored as equity partners by Swedish manufacturing firms. These firms felt that the time horizons of the funds were too short and that their demands were unreasonable. Equally important to this study is the findings of Forsaith and McMahon (2003) on the longitudinal survey conducted on manufacturing SMEs in Australia. The conclusion of the study was that only a small proportion of SMEs ever undertake new equity financing, suggesting that this is not a popular financing alternative. Also, most SMEs are predominantly closely-held concerns with controlling interests in the hands of working owners, and any new equity financing is been undertaken in a manner that maintains this situation.

SUMMARY, CONCLUSION AND POLICY RECOMMENDATION

This paper examines capital structure of Small and Medium Sized Manufacturing Enterprises in Nigeria. The key findings of this research, as revealed in this survey, are summarized as follows: 1) A majority of the responding manufacturing SMEs are relatively new and small sized, 2) Ownership is primarily Nigerian and ownership is primarily as a sole proprietorship and 3) Debt financing appears to dominate their preference, apart from their personal saving and retained earning.

There is an evidence broadly suggesting Pecking Order financing behavior among manufacturing SMEs in all the zones in Nigeria. This is shown from the small proportion of these firms that considered equity financing through venture capital, either as start-up capital or for expansion. Moreover, the size and legal structure of the responding firms could equally explain the reason for this behavior. The majority of these firms are small and sole proprietorship (or family business), hence they might be unwilling to dilute the ownership of the business so that they can maintain control over operations and assets.

However, it is worth noting here, that equity financing, through venture capital, is relatively new in Nigeria, hence there is possibility that the industrialists had not been well enlightened about the benefits of this form of financing. Inspite of the newness of the scheme, however, the preference of the industrialists, after four years of its implementation, suggested that the capital structure decisions of SMEs in Nigeria follows the Pecking Order Theory. That is, they prefer internal financing, and if external financing is required, debt is preferred over equity.

There is no doubt that venture capital financing, through SMEEIS, is an innovative way of financing the real sector of the economy in Nigeria, hence care should be taken to insure that success is not be undermined by faulty implementation. Therefore, the policy of the government should be directed at re-orientation of the mindset of both the SMEs promoters and the bank officials.

There should be more and constant enlightenment programs directed at educating program participants about the concepts and benefits of venture capital for business financing, especially for the SMEs. The orientation of both the industrialists and banks needs to be changed to have the right motivation, and demonstrate what can be gained if they nurture their projects to success. Doing so will create wealth for the benefit of national economy and succeeding generations of Nigerians who will depend on the project for their living. This can be conveniently achieved when they are ready to "become small fish in the large water rather than being a large fish in very small water".

Finally, it should be noted that equity investment by banks can only form a part of the financial package of manufacturing SMEs. Consequently, the scheme cannot succeed in its objective if SMEs promoters do not provide additional equity contribution. It is therefore suggested that the Bank of Industry (BOI) should be instructed to provide long-term loans to the SMEs promoters, once the project ideas had been thoroughly appraised and viability ensured. This will give the opportunity to the promoters of manufacturing SMEs to meet their equity contribution and maintain higher ownership control.

As expected in the guidelines for the Scheme, in addition to providing financing, the banks are also expected to undertake promotional activities, which include the identification, development and packaging of viable industries with enterprising customers. Therefore, a policy should be implemented to encourage the bank to willingly accept these responsibilities.

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A STUDY OF MORAL DECISION-MAKING: BUSINESS MAJORS VERSUS NON-BUSINESS MAJORS

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ABSTRACT

In the field of psychology there is a theory of ethical grounding that distinguishes between people on the basis of "idealism" versus "relativism." An idealistic person is one who believes in absolute truths, values, and rules. A relativistic person, on the other hand, believes that truth is relative to some context; and for them there are no, nor should there be, any absolute values or rigid ethical rules of conduct. This study surveyed undergraduate business and non-business students at a mid-sized southern university to examine whether business majors differed from non-business majors on idealism/relativism and moral decision-making. This research question has important implications not only for pedagogical purposes but also practical implications in the hiring of persons by employers. The results of the study produced evidence that on theoretical terms business students are more relativistic than non-business students but when presented with practical real-world situations in which to apply relativistic thinking, the two groups were not significantly different.

INTRODUCTION

Academic dishonesty has been a persistent problem on college campuses for a long time. Over sixty years ago Drake (1941) reported that 23% of undergraduate students cheated in some form while in school. In more recent times McCabe (2002) found that 33% admitted to cheating on exams and 50% reported cheating on written assignments. Several predictive characteristics have been found to correlate highly with academic dishonesty including being male, being at a large state-supported school, and lower GPA's (Brown & Emmett, 2001). McCabe & Trevino (1997) also found that age, fraternity or sorority membership, and peer approval of dishonesty and cheating were also associated with higher rates of academic dishonesty. The self-reported rate of cheating in business schools has been found to be higher than other majors and colleges, with 82% of business majors reporting cheating during their undergraduate years (McCabe, 1992).

Elevated academic dishonesty in business students is a major concern for business colleges for two main reasons. The first reason is an academic one, reflecting the effectiveness of the ethics courses that are being taught in the business schools. The second reason is related to the recent round of scandals and dishonest business practices that are making a national impact. It is suggested that moral based decisions while in college are related to business practices after graduation (Barnett, Bass, & Brown, 1994).

Ethical ideals have been reliably measured through moral reasoning and decision-making tasks (Forsyth & Nye, 1990; Forsyth, 1992). Judgments about the ethics or morality of a specific scenario are typically used within decision-making models. Moral philosophy refers to a set of beliefs, attitudes, and values that one uses to make judgments of ethical issues (Forsyth & Nye, 1990). According to Forsyth's (1980) two-dimensional model of personal moral philosophies, there are two main dimensions to personal morality; relativism and idealism. Relativism describes the degree to which one rejects universal moral principles. People who are high on this dimension do not believe in moral absolutes but examine situations on a relative basis. Idealism refers to one's attitude towards the consequences of an action and how it may affect others. Individuals high on idealism believe that moral actions should have positive consequences and do not believe that others should be harmed in the pursuit of a goal. Less idealistic individuals believe that sometimes other people may get harmed in the pursuit of a greater good (Forsyth, 1992). There is

also a general assumption by some researchers that a correlation exists between ethical judgment, intentions, and actual behaviors in regards to an ethical issue (Trevino, 1986) but others have questioned this assumption (Forsyth & Berger, 1982). According to Forsyth and Berger (1982) the relationship between moral philosophy and moral choices is not a certain one. They failed to find a relationship between cheating on a complex task and score on a moral questionnaire and suggested that the application of morality to real-life situations might depend on whether a moral dilemma is at stake or what the consequences of their actions may be. Factors that influence ethical judgments are of interest because of this questionable relationship with behavioral outcomes.

The current study addressed the question of whether the ethical behavior of all majors should be a concern for universities or if business students rank lower on morality. Psychology students have an elevated "ethic of caring" compared to business students so they should score higher on idealism but lower on relativism as measured by an Ethics Position Questionnaire (Forsyth, 1980). This study will also examine the correlation between moral scores and moral choice in an ethical dilemma.

METHODOLOGY AND SAMPLE DESCRIPTION

The Ethics Position Questionnaire (Forsyth, 1980) was distributed to 192 students enrolled at a mid-sized southern University. This survey is designed to assess differences in ethical ideology. The two dimensions represented on the questionnaire are idealism and relativism. The first ten questions assessed idealism and the second set of ten questions assessed relativism. Cronbach alphas for internal consistency were 0.82 and 0.84, respectively for idealism and relativism (Forsyth, 1980).

Answers to the questions were measured on a Likert scale from 1-7. Of the 192 students, 140 were business majors and 52 were non-business majors. Of those non-business majors, 50 were psychology majors and 2 were other behavioral science majors. One hundred respondents were female, and 92 were male. Demographics included number of credit hours completed toward major as well as their minor, gender, age, and overall GPA.

The second major section of the survey included five scenarios representing specific "Problem Situations in Working Life" adapted from Hartikainen and Torstila (2004). Each scenario dealt with an ethical dilemma set in a realistic work-environment context. The first situation dealt with Sally who was employed as a hair stylist working at a salon. Sally accepted another job at another employer, but the new job was not to start for another month. During this month, she began soliciting clients to follow her to her new employer without telling her old boss what she was doing. The ethical question was whether this was acceptable conduct on her part.

Scenario number two was a situation involving a residential home realty office. The two star agents in the office (together accounting for more sales than the entire rest of the office combined) were a male and female living together out of wedlock. The office policy was unambiguously "no romantic fraternization amongst employees." The ethical question was how Rupert, the office manager, knowing of their living arrangement in defiance of company policy and of their outstanding sales performance, should evaluate the two at their annual performance review.

In the third scenario Elouise, the general manager of a division of a cosmetics company, was about to develop her next year's operating budget. Elouise knew that traditionally the way to look good, get praised profusely, and get promotions/pay raises was to "beat the budget", i.e., have actual profits, when they happened, come in at a greater amount than what had been budgeted. In this vignette, she intentionally under-estimated revenues and over-estimated expenses from what she really thought that they were going to be. The ethical issue was: "Is this morally acceptable behavior?"

Scenario number four dealt with Chuck who was a marketing manager of a building supplies company that had in recent years survived the storm of a weak economic environment. The company did so with the loyal support of many small, albeit only marginally profitable customers. But things are different now – business is booming! The problem is: the company now has insufficient product to meet all the needs of all their customers. Chuck responded by supplying first the biggest most profitable customers, who mostly happened to be new customers. Unfortunately, this meant not having any product remaining to sell to the old, smaller, loyal customers (forcing many of them out of business because they were unable to obtain an alternate supply of product). Is this morally acceptable behavior on the part of the marketing manager?

Finally, in the fifth scenario Margie, a young lawyer, was faced with choosing how to allocate her personal volunteer time. Margie preferred to volunteer substantial time to a project sponsored by her church of building free housing for the poor. At her annual performance review, her employer strongly suggested she get involved in a time consuming project of raising money for the local symphony orchestra. The firm partner conducting her review said that the firm felt very strongly that as the symphony project was certainly a good cause, it also had the added benefit of exposing her to many "pillars" of the community who could turn into lucrative clients for the firm. Margie felt that there was absolutely no way that she could do justice to both projects simultaneously, so she resigned from the church group and engaged with the symphony fund-raising group. How morally correct was the young lawyer's decision?

In each situation, one of the characters in the scenario took an action in response to the issue at hand. For each scenario participants were asked to respond via a 7-point Likert scale with the degree to which they thought 1) the action is **personally** acceptable, 2) the action is not **generally** acceptable, 3) the **individual** in the scenario acted morally right, and 4) the action is not acceptable to my **fellow students.** For analysis purposes, the four questions were designated as dependent variables, and again, the independent grouping variable was major, business versus non-business.

STATISTICAL METHODS AND RESULTS

As mentioned in the above section, the first ten questions/statements of the Ethical Position Questionnaire survey dealt with idealism. The higher the response on the 7-point Likert scale, the more the participant was in agreement with the construct. A composite score on idealism was computed by adding the average numerical responses to the first 10 questions. Scoring procedures were repeated for the ten relativism statements (questions 11 through 20 on the survey).

Independent samples t-tests were performed on the composite idealism and relativism scores separately by major, business vs. non-business. A significant difference was found on relativism, ($F=7.28$, sig. = .01), with business majors scoring an average of 43.73 (SD = 9.05) and non-business majors scoring 40.19 (SD = 11.90). No significant difference was found on idealism, ($F=.01$, sig. = 0.91), with a mean for business majors of 52.93 (SD = 8.04) and non-business majors of 53.71 (SD = 9.24).

Having observed that business students were more relativistic than non-business students, the next logical step was to determine specifically where amongst the twenty individual questions/statements the two groups differed. Table 1 shows the results of the independent samples t-tests with major as the independent grouping variable and each of the ten idealism questions/statements run separately as the dependent variable.

Table 1: Scores and Significance Level of the 10 Idealism Subscale Questions of the Ethics Position Questionnaire by Major (business and non-business).

Question on Ethics Position Questionnaire	Non Business		Business		F	Significance level
	Mean	SD	Mean	SD		
Q1	6.19	0.83	5.86	1.10	0.79	0.37
Q2	5.33	1.44	5.28	1.42	0.01	0.99
Q3	5.56	1.53	5.49	1.29	0.23	0.64
Q4	6.33	1.04	5.93	1.41	1.34	0.25
Q5	6.30	0.95	6.01	1.16	1.63	0.20
Q6	6.04	1.34	6.16	1.07	0.36	0.55
Q7	3.41	2.22	3.79	1.84	0.39	0.53
Q8	5.19	1.44	5.40	1.32	0.21	0.65
Q9	4.26	2.03	4.50	1.73	1.23	0.27
Q10	4.67	1.41	4.80	1.51	0.18	0.67

Consistent with the prior observed result of no difference on the aggregate idealism construct between the majors, none of the individual idealism statements indicated significant differences. However, when independent samples t-tests were run on each of the ten individual relativism questions/statements using a p-value cut-off of .10, six of the ten indicated statistically significant differences between the two majors (see Table 2).

Table 2: Scores on the Relativism Subscale of the Ethics Position Questionnaire by Major (business and non-business).

Question on Ethics Position Questionnaire	Non Business		Business		F	Significance level
	Mean	SD	Mean	SD		
Q11	1.93	1.24	3.20	1.54	18.04	0.01
Q12	5.26	1.75	5.12	1.45	0.06	0.81
Q13	4.52	2.01	5.16	1.63	7.06	0.01
Q14	4.52	1.25	4.63	1.31	1.20	0.27
Q15	3.33	1.47	4.91	1.70	18.49	0.01
Q16	3.44	1.74	4.26	1.71	6.23	0.01
Q17	3.48	1.42	4.20	1.51	3.52	0.06
Q18	3.81	1.47	4.51	1.10	5.35	0.02
Q19	3.33	2.04	3.78	1.81	2.04	0.16
Q20	3.30	2.05	3.89	1.86	2.09	0.15

Four statements produced p-values for group differences of .01 or less including question 11, “There are no ethical principles that are so important that they should be a part of any code of ethics.” (business mean = 3.20, SD = 1.54; non-business mean = 1.93, SD= 1.24), and 15, “Questions of what is ethical for everyone can never be resolved since what is moral or immoral is up to the individual.” (business mean = 4.91, SD 1.70; non-business mean = 3.33, SD =1.47). In both instances, the degree of agreement with the statement was significantly greater for the business majors versus that of the non-business majors.

Two other statements showing significant differences between the majors were number 13, "Moral standards should be seen as being individualistic; what one person considers to be moral may be judged immoral by another person." (business mean = 5.16, SD= 1.63; non-business mean = 4.52, SD = 2.01) and 16, "Moral standards are simply personal rules that indicate how a person should behave, and are not to be applied in making judgments of others." (business mean = 4.26, SD 1.71; non-business major = 3.44, SD= 1.74).

Also showing statistically significant differences were Question 18, "Rigidly codifying an ethical position that prevents certain types of actions could stand in the way of better human relations and adjustment." (business mean = 4.51, SD = 1.10; non-business mean of 3.81, SD = 1.47), (p-value = .02) and 17, "Ethical considerations in interpersonal relations are so complex that individuals should be allowed to formulate their own individual codes." (business mean=4.20, SD = 1.51; non-business mean = 3.48, SD = 1.42), (p-value = .06).

In summary, an analysis of group differences (business majors versus non-business majors) for the ten individual relativistic oriented statements produces evidence that theoretically the business majors are more relativistic in their thinking than the non-business majors. The next phase of the study tested this evidence in the context of real-world business scenarios.

Problem Situations in Working Life

The second half of the survey described five real world business scenarios, each containing an ethical decision situation. For all five scenarios, participants were asked to respond to four questions, each structured in terms of a seven-point Likert scale. The first question was whether the respondent found the ethical action taken in the scenario as "personally acceptable." The second question was whether the respondent found the ethical action taken in the scenario as "generally acceptable." The third question was whether the respondent felt that the decision-maker described in the scenario acted "morally right" or "morally wrong"; and the fourth question was whether the respondent felt the action taken in the scenario to be "acceptable to my fellow students'. The mean comparisons for the four questions, for each of the five scenarios, between business students versus non-business students are given in Table 3.

Business and non-business students significantly differed on one scenario, Margie, the young lawyer who gave in to employer pressure to reallocate her volunteer time. For the Likert-scale question, "Margie acted morally right" (1 on the scale) versus "Margie acted morally wrong" (7 on the scale), the mean business student response was 4.24, (SD=1.58), and the mean non-business student response was 4.78 (SD=1.53). As expected, the non-business students thought that Margie's actions were morally wrong. Also, for this same scenario in response to the question "Action is not acceptable to my fellow students" (1 on the scale) versus "action is acceptable to my fellow students" (7 on the scale), the business mean response was 4.09 (SD= 1.41), and the non-business mean response was 3.72 (SD=1.47). Not only did non-business students think that Margie's actions were not appropriate, but they thought that their fellow students would view Margie's actions as unacceptable.

In looking at the four questions the respondents were asked for each of the five scenarios, the only one that shows a consistent pattern is the first question – Is the action described in the scenario "personally acceptable" (1 on the scale) or "not personally acceptable" (7 on the scale). In all five scenarios the non-business mean is greater than the business mean, indicating the non-business people might possibly have a greater degree of disagreement with the action taken than do the business people. However, in no comparison is the difference in mean statistically significant. For all other questions the directional comparison of the two groups (i.e., is one group mean greater or less than the other group mean) produces mixed results; but, again, all without statistical significance. All this goes to say that, except for two group comparisons in the Margie scenario, 18 of the 20 possible comparisons across all five scenarios produce

indeterminate results as to the question of whether business students are more relativistic than non-business students in their moral philosophies.

Table 3 – Mean Likert Scores on the Practical Business Scenarios by Major (business and non-business)

	Personally Acceptable		Generally Acceptable		Morally Right or Wrong		Acceptable to Fellow Students	
Sally	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**
Non-Business	4.87	2.17	3.13	2.00	4.96	1.92	3.30	1.63
Business	4.56	2.12	3.45	2.04	5.06	1.91	3.52	1.79
P-value	0.38		0.44		0.83		0.31	
Rupert								
Non-Business	4.08	2.12	4.25	1.72	4.21	1.99	3.98	1.55
Business	3.89	1.72	4.27	1.70	4.13	1.66	4.21	1.48
P-value	0.94		0.72		0.70		0.65	
Elouise								
Non-Business	4.67	2.11	4.17	1.99	4.60	1.91	4.23	1.65
Business	4.56	1.79	4.04	1.81	4.73	1.68	3.81	1.73
P-value	0.51		0.97		0.53		0.25	
Chuck								
Non-Business	4.62	1.93	3.91	1.94	5.00	1.82	3.51	1.83
Business	4.56	1.80	4.04	1.79	4.78	1.49	3.83	1.46
P-value	0.54		0.22		0.29		0.13	
Margie								
Non-Business	4.41	1.83	3.87	1.77	4.78	1.53	3.72	1.47
Business	4.23	1.68	4.21	1.52	4.24	1.58	4.09	1.41
P-value	0.59		0.14		0.09*		0.09*	

- Sig. at the 0.05 level with a one-tail test

LIMITATIONS AND CONCLUSIONS

The first phase of this study presented evidence that, in theory, business students are more relativistic in terms of their ethics positioning when compared to non-business students. Comparison of the mean differences on the individual questions on the questionnaire indicated that on 6 of the 10 relativism questions business majors indicated a more relativistic outlook than the non-business majors. These results suggest that business students tend to reject universal moral principles.

Forsyth (1992) suggests there are two types of individuals who score high on relativism, the first is a situationist or someone who tries to produce the best outcome possible for the group and that for this to be achieved moral rules cannot be applied fairly across all situations. The second is the subjectivist and they also reject universal moral rules but they are less concerned about doing the most good for the group and are more concerned with increased personal gains. Both of these typologies reject a universal code of ethics and that is not a comforting thought for those in the business schools teaching ethics with the hopes that the future accountants and managers will develop ethical business practices.

The second phase of this study focused on five business-oriented scenarios that asked students to make a judgment of the morals of a particular action by a decision-maker. Respondents were asked to judge the

decision-maker's actions in the context of whether the action was personally acceptable, generally acceptable to society, acceptable to fellow students, and morally right or wrong. In only two instances were there statistically different mean responses between the business students versus the non-business students. In these two instances non-business students rated the action by the decision-maker to be more personally unacceptable and unacceptable to their fellow students compared to the business majors. There were no differences in the judgment of morally right or wrong.

Phase one, moral philosophy, and phase two of the study, moral choices, produced somewhat conflicting evidence as to the research question of whether business students and non-business students differ in the degree of morality that they bring to their decision-making. These findings support Forsyth and Berger (1982) in that ethical philosophies do not always match ethical decision-making. One limitation in the current study is that the scenarios were made up and not real-life behaviors. Also, the scenarios were about other people and not about personal choices and consequences of those choices. Further studies need to be done observing real-world behaviors with personal gains or losses.

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MANAGEMENT ETHICAL BEHAVIOR: THE AUTOMOBILE INDUSTRY IN JUAREZ CITY

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ABSTRACT

This research study investigated the relationships between ethical behavior, ethics codes, gender, age, work tenure and education of managers working in the automobile industry in Juarez, Mexico. This industry was chosen because of its importance in the economics fields. The ethical behavior was measure using the Defining Issues Test (DIT). A demographic questionnaire asked the participants their gender, age, work tenure and education level. The results indicate that there is not relationship between the existence of ethics codes and ethical behavior of the managers. Additionally, the results of the analysis provide significant statistical support to establish that there is no statistical significance between age, work tenure and education. Furthermore, the study revealed a statistical difference between ethical behavior and gender. The findings in this study suggest that there is something in this industry that shows women have a lower level of ethical behavior. The final considerations and suggestions in this study have theoretical and methodological value for the specialists who have the responsibility of teaching and research about organizational issues. The industry implications of the results are outlined, along with the limitations of the study and recommendations for future research.

INTRODUCTION

Every day, managers confront ethical dilemmas in the work place. Managers endanger their integrity facing or engaging in fraudulent acts. Their jobs are filled with ambiguity that places them at the limits of honesty. Regularly, managers find it difficult to escape to these ethical dilemmas. When the behavior of the managers is morally questionable, our immediate reaction is to try to understand such behaviors. For example, when company managers face ethical dilemmas, such as corrupt events, they prefer their personal well being as a opposed to acting with honesty; in the same way, accountants have the responsibility to uncover and report fraud or possible scandals (Forte, 2000). It is very difficult to avoid and escape to these dilemmas. If we are able to decipher, to some degree, this type of behaviors, we are in the path of ethical enrichment.

Managers are considered moral agents since their decisions set the ethical tone of the entire organization. Ethical decisions are impacted by structural and external factors. However, these factors are less relevant in light of the growing individualism in the work place, which is seen as the origin of unethical decisions. Despite the dominant individualism prevalent among business people, they still must conform by rules that will allow the business community censor unethical decisions. Codes of conduct in the work place are important ideal guides for decision making. However, according with De George (1999) corporate codes behavior are seldom followed in the decision making process. On the contrary, they are seen as "hypocritical deceit".

The ethical behavior of managers, specifically in the automobile industry, has recently become an issue of concern. Decisions of the top management impact the organizational goals and the organizational ethical behavior. As result, increased attention has focused in the development of the moral reasoning of the managers working in these corporations; therefore, it is necessary to better understand in this context the ethical individual behavior in the decision making process. The main purpose of this study was to

determine if the existence of codes of ethics in the organization has a influence in the ethical behavior of the managers working in the automobile industry.

LITERATURE REVIEW

The "bad apple" effect is attributed to the unethical behavior in the organization of few individuals that lack moral character (Trevino, 1986). If the "bad apple" is the top management, the work place can be an uncomfortable environment for those individuals with high moral development and force them in many cases not to accept the decisions. The manager is considering the leader and controller of the company, through the organization's system and management of the economic resources. Thus, what one immediately discovers upon entering the field of the business ethics is that the illegal activity and the unethical behavior of the managers have the potential to negatively impact the business community.

The ethical behavior, defined as a system of values by which the individuals evaluate and judge their behaviors and those of other individuals, has been highly questioned (Donaldson, 1996). Jean Piaget was the first one in presenting the idea of moral development since birth through adolescence. On the other hand, it is considered that managerial behavior follows the basic phases of the moral development, pre-conventional to the highest, the post-conventional phase, to achieve the objectives of an organization with commitment to the values and principles of the organization.

Thus, to study managerial ethical behavior it is necessary to do it interdisciplinary with the participation of administration and psychology. This would contribute to a more complete description on the issue that if it was analyzed disciplinarily. This research focused on the relation between the managerial ethical behavior and the existence of codes of ethics in the assembly plants of the automobile sector. This would indicate that if the managerial ethical behavior has an association with the existence of codes of ethics, then it would only be necessary to implement codes of ethics in the organizations to generate ethical behavior. In the case that this relation was not significant then the businesses organizations should seek a solid ethical formation of their managers.

The automobile industry is of great importance for the Mexican economy. In 2006, the automobile industry in Juarez, Mexico had more of 34 facilities with approximately 42,000 employees. Cd. Juarez also includes one of the most important Research and Development centers in Latin America: Delphi Technical Center, which employs approximately 1,970 highly trained individuals. For several years, the automobile industry has been immersed in fierce competition in the national and international markets, which has created great pressures to maintain and improve its position in the world market.

The Mexican industry has been touted as being plagued with ethical issues. Assembly companies that have moved to Mexico quickly find out that they are not subject to strict care of the environment and to security standards typical of industries in the developed world (Sargent and Matthews, 1998). Insecure working conditions, low wages and environmental problems have been reported as serious issues in developing countries (Hosmer and Masten, 2003). Corporate restructuring, destruction of the environment and fear to be discharged has forced managers to ethical behaviors (Savitt, 1999).

Studies of managerial behavior have dealt with decision making at different levels, consequences of these decisions, employee satisfaction and organizational effectiveness; however, the moral elements of the decision making process is lees understood and studied (Sergiovanni, 2004). Conflict is produced when employees and management expect from each other ethical behavior, honesty, trust, justice, and on the contrary some of these elements are weak or missing.

It is difficult to determine exactly when corporate ethics codes began to exist. According to Ferrel, Hartline, and McDaniel (1998), codes of ethics have existed from the beginning of the modern corporations in form of creeds. In opposition to the idea that creeds are the precursors of the codes of ethics, Stevens (1994) suggests that the corporate codes have their roots in the 1920s when companies that produced code of ethics originated. It is considered that the corporate codes inhibit the unethical behavior inside the organizations and several studies support this proposition (Murphy, 1992; Tsalikis and Fritzche, 1989). Elm and Nichols (1993) found a positive correlation among the existence in the organization of codes of ethical behavior and high standards of ethical behavior on the part of the managers.

According to Kohlberg's theory (1976), moral development takes place through structured levels and in a hierarchical sequence that is progressive and invariant, in such a way that superior stadium of reasoning include that of the inferior stadium. The work of Kohlberg supports the formalist and universalistic version of morality that philosophy has defended since Kant. This theory of moral development has been valuable to understand ethical decision making in several ways. First, Kohlberg tried to measure moral development. Researchers and philosophers have established theoretical elements about the moral concerns; meanwhile, Kohlberg has conducted longitudinal studies about moral decision making. Second, Piaget and Kohlberg found that individuals are capable of understanding and expressing their own moral principles. Finally, the creation of moral development measures such as the Defining Issues Test (DIT) to have facilitated the empirical work in this area.

Some investigators believe that the men and women develop the moral reasoning in the same form (Rest, 1979; Kohlberg and Candee, 1984). Other have established that the men tend to make decisions based on the sense the "justice", while women base their decisions on the sense of "care" (Rest, 1986). Kohlberg establishes its theory based on an ethics of the justice; however, Gilligan (1985) criticized the psychological theory of the dominant moral development. This author questioned the suppositions and the method used by psychology of the moral development and argued that women are not faulty in their development, but rather they respond differently in expressing their morality.

Regarding the age of the managers, it has been indicated that older managers have a more positive attitude toward moral problems in the organization for their more developed moral reasoning. This explanation seems to agree with the model of moral development suggested by Kohlberg in that individuals develop their moral reasoning with the time. Kujala, (1995) reported a positive relationship between age and ethical behavior. Weber (1990), however, found that there was not a significant difference between the moral reasoning and age of the individuals.

On the other hand, diverse authors point out that the only variable that seems to have effect in the ethical behavior in the business environment is formal education of the individuals (Wimalasiri, Pavri, Jalil, 1996). Also, Gentle (1997) found a positive correlation between the ethical behavior and the education of 117 executives working in offices of the federal government in the United States. Treviño (1992) carried out a longitudinal study and found a positive correlation between the ethical behavior and level of education. Rest (1986) in an analysis of secondary data found a strong correlation between the education level and the scores in the DIT.

The main objective of this study was to determine the ethical behavior of managers in the automotive industry in Mexico and its relation to the existence of code of ethics in the organization and demographics variables such as sex, age, educational level and the managers' work tenure. If the managerial ethical behavior has relationship with the existence of the codes of ethics, then becomes indispensable to

establish codes of ethics in the organizations. On the contrary, if ethical behavior do not relate to the existence of codes of ethics, then the companies will look for a solid ethical formation of their managers.

The following null hypotheses were evaluated in the study.

H1: There is not a significant relationship between the ethical behavior of the managers that have an ethics code in their organizations and managers that don't have an ethics code in their companies.

H2: There is not a significant relationship between gender and manager's ethical behavior.

H3: There is not a significant relationship between age and manager's ethical behavior.

H4: There is not a significant relationship between education and manager's ethical behavior.

H5: There is not a significant relationship between work tenure and manager's ethical behavior.

METHODOLOGY

To obtain the information, a mailed survey was utilized; the Dillman's total design method (1999) was followed in this study. The managers received an envelope consistent of a notification letter, the questionnaire and a self-addressed, self-stamped envelope for returning the survey. The respondents first received an advance notice letter, which explained the purpose of the study and asked for their assistance. Approximately one week later they were sent with a cover letter. Dillman's method had a significant influence on the rate of response. Phone calls were made a week from the delivery of the questionnaire to those people that had not returned the package. Three weeks later telephone calls were made to increase the return rate. A convenience sample of 75 managers working in companies of the automobile industry in Juárez, Mexico was taken. These people were selected because they face ethical dilemmas in their daily work as managers (Reynolds, 2000); 42 managers of the automobile industry returned the questionnaire for a return rate of 56%.

The Defining Issues Test (DIT) was used to measure the managers' ethical behavior. The translated test used with permission from the Center of Ethical Development of the University of Minnesota. The validity and reliability of the DIT has been established. Several studies have reported that the reliability of the instrument, by means of the coefficient alpha of Cronbach, is in the acceptable range of .70 to .80, and the test-retest evidences with a correlation average of .82 and the dependability .80. The instrument evaluates the answers in a Likert scale. Respondents are presented with ethical dilemmas and have to select their 4 more important answers in a scale of "more important" until "more important point". This study had a coefficient alpha of .78.

RESULTS

The data analyzes in the study consisted of descriptive statistics, Pearson correlations and *t* tests, because this study seeks to be differences in the gender with regard to the means of the ethical behavior of the managers. Table 1 shows a summary of the characteristics of the sample. The average age of the surveyed managers was 44.1 years, while the years of experience were 8.5 average. Women were 14.3% of the sample and the level of prevalent education was professional degree with 71.4%. Additionally, the production managers represented 16.7% of the sample and the plant managers 7.1%.

Table 1: Characteristic of the Sample

Variable	*Category*	*Mean*	*Standard Deviation*	*Frequency*	*Validity %*
Age		44.1	7.84		
Work Tenure		8.1	6.62		
Gender	Female			6	14.3
	Male			36	85.7
Educational Level	High School			6	14.3
	Professional Degree			30	71.4
	Master Degree			6	14.3
Manager Position	Production			7	16.7
	Engineering			5	11.9
	Quality			3	7.1
	Accounting			6	14.3
	Maintenance			4	9.5
	Information Systems			4	9.5
	Materials			2	4.8
	Buyer			2	4.8
	Plant			3	7.1
	Human Resources			4	9.5
	Operations			2	4.8

The results shown here represent the obtained information of the interviewed managers. Table 2 sample the mean obtained in the index p by the interviewed managers. The managers, whose companies have an establish ethics codes had a slightly superior mean score, 29.7 than the managers that do not, 27.1. The average in the score of the index p suggests that male managers have a higher ethical behavior than female managers working in companies of the automobile industry. Age was an influencing factor in the index p, which suggests that the older a manager was that lower the score obtained. Managers that had more than 10 years of experience obtained the lowest mean in the index p. As the level of formal education was bigger a higher score in the index p was obtained by the interviewed managers.

The results of the Pearson correlation analysis are shown in Table 3. The existence of ethics codes in organizations was not significant in the ethical behavior (Pearson r = - .186 and a value p = .736), the same as the age factor (r = - .08 and a value p = .313). The results show that the work tenure does not have a significant difference with the ethical behavior (r = - .06 and a value p = .212), in the same way the education level did not have a statistical significance (r = .199 and a value p = .09).

Table 2: Summarize of the Ethical Behavior, the Index "p", of Each Variable (Description, Means of the Index p, Frequency, Standard Deviation and Range)

Variable	Mean	Frequency	Standard Deviation	Range	
				Minimum	Maximum
Ethics Codes					
Yes	29.7	20	11.1	13.3	48.3
Not	27.1	22	11.5	13.3	50.0
Gender					
Female	18.7	6	6.6	13.3	26.7
Male	29.8	36	11.1	13.3	50.0
Age					
28-39	29.3	12	10.31	15	48.3
40-49	27.4	23	9.87	10	50.0
50-59	25.9	4	6.03	18.3	40.0
60-64	22.9	3	4.16	16.6	25.0
Work Tenure					
1-5 years	28.5	16	8.35	13.3	50.0
6-10 years	29.8	15	9.38	10	50.0
More of 10 years	23	11	5.08	16.6	40.0
Education					
High	24.8	8	8.69	16.6	41.6
Professional degree	27.3	28	9.36	10	50.0
Master degree	30.5	6	9.41	13.3	43.3
Total	27.7	42	9.34	10	50.0

Table 3: Results of the Correlation of Pearson Analysis for Hypotheses 1, 3, 4 and 5

Variable	Mean p Index	Standard Deviation	r	p value
Ethics code				
Yes	27.8	8.8	-0.186	0.736
Not	27.3	10.3		
Age	27.2	9.3	-0.08	0.313
Work tenure	27.6	9.4	-0.06	0.212
Education	27.3	9.4	0.199	0.09

The analysis of the effect of the gender in the ethical behavior is shown in Table 4. The obtained result of the t-test, which is used to identify the possible differences due to the gender of the managers, is presented in the table 4. The results indicate that the gender has a significant difference in the ethical behavior (t = .01 p = .04).

Table 4: Results of the Test t, for Possible Differences in Gender

Variable	Mean p Index	Standard Deviation	t	p value
Gender				
Female	18.7	6.6	0.01	0.03
Male	29.8	11.1		

Table 5 shows the mean in the index p for managerial positions. In this research, a population mean was obtained among managers of $\mu = 28.45$; additionally, there was a high level of ethical behavior in plant and accounting managers ($\mu = 40.83$, 34.44 respectively). However, the level for human resources managers was the lowest ($\mu = 19.58$).

Table 5: Summarizes of the scores of the Index p for Managerial Positions

Manager's Position	Mean	Manager's Position	Mean
Production	27.08	Materials	23.33
Engineering	26.67	Buyer	13.33
Quality	25.00	Plant	40.83
Accountant	34.44	Human Resources	19.58
Maintenance	31.67	Operations	25.56
Information System	31.67		

The results of the analysis offer a strong statistical support for the hypotheses presented in the study and the following section underlines the managerial implications of the results, followed by the limitations of the study and the recommendations for future researches.

DISCUSSION

The ethics of the companies begins at managerial level, the past events bring to light that the manager's personal integrity establishes the ethical environment of the whole company. The results indicate that the ethics codes in place do not influence the ethical behavior of the managers working in companies of the automobile industry in Juarez, Mexico. The current perception is that by reading the ethics codes will affect the ethical behavior. The problem is not enforcing, applying the codes and sanction the unethical behavior; the problem is in the practical application where the pressures arise. During decades the ethics codes have proliferated. These codes have been useful in providing information to the employees on the legal requirements of the company, approaching specific situations, such as corruption; at the same time

that they serve like guide to practices accepted inside the organization; however, the unethical behavior is still present.

This study showed that the gender of the managers impacts the ethical behavior. Female managers obtained lower levels of ethical behavior that male managers. Gilligan (1985) believes that men typically adopt an orientation of justice toward the conflicts; they emphasize the importance of the rights, justice and obligations in the resolution of dilemmas. According to Gilligan, women have an orientation to care, emphasizing the importance of the human relationships and the well-being of all the involved parts. She firmly states that men as well as women are able to consider both perspectives.

Additionally the research found the same level of ethical behavior, in relation to the formal education of the managers; other investigators have found that a higher level of formal education has been associated with higher levels of ethical behavior. Investigators like Rest (1986) and Treviño (1992), establish that something exists in the educational process that is in the development in high more ways of ethical thought. The implication is that the education through the training can force the ability of the individuals to act in higher levels of ethical behavior.

Managerial ethical behavior in the highest concept is the ambition of competitive success. In a world in which competition is presented in an unceasing way, this ambition supposes that it is capable of harming. However, disloyalty or doubtful blows are prohibited. It is necessary for managers to arm themselves from violence, intimidation, privileges, corruption, among others, to carry out powerful actions that are ethical and legal. These actions include investments, innovation, quality, service, training, motivation, team work, logistics, which supposes a margin of profitable earnings. For many companies is certain that the ambition of a high level of professional ethics goes along with the ambition of a high level of effectiveness and of investment in the progress.

A manager's ethical ideal is becoming a guide that will show his personnel the route to honesty and will allow the professional growth of everyone in the organization, which would not happen in an unethical environment. In this way, the ambition of this research is to activate the compass in the spirit and conscience of a number bigger than managers. When the actions of the managers are clear, they do not need to explain the reasoning behind their decisions. Responsible managers will be able to clearly show that he/she has act ethically and provide confirmation of his/her actions.

While the results of the study allowed checking the objective of the investigation, the study is subject to certain limitations. The transverse nature of the study does not allow the causal inference. Also, it should be considered that the study was carried out in a time of a strong economic recession and that the peculiar situation of the moment could affect the decisions of the interviewed fellows. Additionally, it should be careful in not to generalize the results to other industries or other professions, since the study only analyzes the managers of the automobile industry. Finally, the answer rate creates some concern, although it was not to be a problem this possible slanting.

Future investigations will be able to continue looking in the managerial level and analyze the ethical behaviors with the objective of create the conditions to promote the biggest level of ethical behavior. New investigations need to evaluate the scenarios in stronger situations or specific problems, either of bribes, sexual pursuit and financial handlings. Studies of this type will be driven to investigate the managerial ethical behavior from a global perspective. Investigation including managers of different nations can provide valuable information to the existent relationship of the nationality and the ethical behavior. Future studies could investigate the relationship among different industry types, age, gender and managerial ethical behavior. The managers that move from one company to another carry a load

with the principles and prejudices of their previous positions, that which can influence their ethical behavior.

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A MARKETING COMPETITION WITH A FINITE TERMINATION TIME: SOME DIFFERENTIAL GAMES

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ABSTRACT

This paper attempts to develop some theoretical insights into the dynamics of marketing campaigns. It studies a model where two firms are competing in an advertising campaign with sales at a specified termination date and asks how the trajectory of resource expenditures would change over time. Among its main findings are that the dynamics of competition force the firms to accelerate their expenditure on advertising throughout the entire time period.

INTRODUCTION

Marketing managers are fully aware that competition over market shares may involve long term strategic considerations, but so far the literature in the field only contains a small number of abstract analyses of these dynamics. The result is that, although we have a wealth of detailed information on particular campaigns, we have little by way of theoretical insights into the factors that shape the development of campaigns over time. This paper is a contribution to redressing this balance.

The paper will consider the following, fairly straightforward, question. Imagine we have two firms engaged in a competition to market a product over time in order to get the greatest payoff, measured in terms of customer support or sales, at some terminal time. This might happen, for example, where rival firms are launching a new product and attempting to build public support in anticipation. The most obvious examples would be pre-release advertising for a film, or motor car companies attempting to launch a new vehicle at a specified date. Other examples would be the rivalry between Boeing and Airbus prior to the aircraft being available, or two companies proposing rival developments of large retail or housing complexes and undertaking preliminary marketing in order to build support prior to the sale date. Another, not so obvious, example that has largely been ignored in the marketing literature is competition between political parties with the terminal time being the election date.

The question I want to consider is, what is the optimal trajectory of advertising expenditure over time if the only assumption made about individuals is that the rate of change in their support at any given time will increase if advertising expenditure is increased? In other words it is not assumed that consumers are forgetful, or that they accumulate memories.

To give the study a concrete point of reference, it often seems to be the case that advertising accelerates towards the terminal point of the sort of campaign mentioned. Although not too much can be made of this sort of casual empiricism it does open some questions about how this sort of acceleration can be explained. Clearly it would make sense if it were simply assumed that customers forget previous messages. Could it be explained in the absence of such assumptions?

The main finding is roughly that, for the model studied, the firms mostly accelerate their expenditure for the entire period up to the terminal time in a way consistent with the previous observation. I demonstrate this for an open loop and closed loop game and also compare these results with a leader follower game, although is not possible to produce analytical solutions for every instance.

What these findings tell us is that any acceleration in marketing expenditure can be explained as the result of the process of competition and does not require assumptions about customers being forgetful or

responding to the most recent messages. To get some feel for the meaning of this consider the case of a single firm. If customers were not forgetful, there would be no reason to increase resource expenditure as the deadline approached. It may as well spend all its resources at the beginning of the time period. If they are forgetful all resources should be spent at the end. The fact that the firms in competition do neither of these tells us something about the dynamics of the competitive process itself.

It will be noted that most of the results of the paper could not have been guessed in advance. Take the simple case, analyzed below, where the fraction of market share for each firm does not alter over the entire period to the end of the campaign. Why, for example, should firms keep accelerating their expenditure on marketing in order to stand still? This is often known as the Red Queen effect after the Red Queen's comment to Alice that it is necessary to run faster to stand still (Carroll, 1960).

This is not the first attempt to study the dynamics of marketing in management science. The dynamics of advertising for a single firm has been extensively studied since the Nerlove-Arrow (1962), and Vidale-Wolfe (1957) models. There have also been studies of advertising competitions between oligopolies in discrete time such as that of Villas-Boas (1993) and Steenkamp (2005) and in continuous time such as that of Fruchter and Kalish (1997) and Chintagunta and Vilcassim (1992). This paper is closest to the study by Fruchter (1997). It differs in that the competition has a finite termination date. In addition I also study a game where one firm decides its expenditure first.

I set out the paper as follows. A model of the dynamics of marketing activities is developed in Section two. In section three, the model is analyzed for the case where both firms formulate their strategies at the beginning of the period. Section four deals with the case where firms adjust their strategies as they get feedback. Section five deals with the case where one firm is a leader and firm two follows.

THE MODEL

Suppose that there are two firms engaged in a competition to market a product at some specified time in the future and they are competing for a fixed pool of customers. This pool is large with each customer having equal purchasing power. Each firm can spend any amount it likes on marketing, although there is a cost associated with this which keeps the expenditure in bounds. It is assumed that the rate of change in the fraction of the potential customers that intend to purchase the product of firm *I* at the release date increases with *i's* expenditure if nothing else changes. The firms might decide on the pattern expenditures in a number of ways.

1. They might make a plan at the start of the game about how much to spend at each instant and hold to this plan for the entire period until the campaign ends. This is called an open loop marketing game.

2. They might change their strategies at each instant in response to information on the levels of support. This is called a closed loop game.

3. One firm might delay its actions until the other has formulated its campaign. In this case firm one is the leader and decides on it expenditure of resources knowing that firm two will then choose a pattern of expenditure to get the greatest share of the pool for itself. This is called an open loop game.

The formal specifications are as follows. Subscripts 1 and 2 refer to the firms. Time is written *t* and the period until the game ends is normalized to [0, 1]. The resource expenditure of firm one at time *t* is $u_1(t)$ and of firm two is $u_2(t)$ and the cost of expenditure is $\frac{c_1}{2}u_1(t)^2$ and $\frac{c_2}{2}u_1(t)^2$. The fraction of the buyers that is disposed towards firm one's product at time t is written $x(t)$ and it is assumed that the number of

buyers is sufficiently large that x(t) can be approximated with a continuous function. This means that the fraction of the total buyers for firm two is *y = (1 - x)*.

It is assumed that the effect of spending by the firms on the rate of change in x depends on the fraction of support they control and declines as this fraction increases. This could be explained, for example, by assuming that the most easily persuaded potential customers are won over first and that less easily persuaded customers require more effort. This can be written as:

$$\dot{x} = k_1(1-x)u_1 - k_2 - k_2 x u_2 \tag{1}$$

for k_1 and k_2 constants.

Note that the firms are only interested in the payoff at the terminal time but that the costs of expenditure will be incurred across the entire time period. In order to capture this it is assumed that they attempt to maximize payoff functions of the form

$$J^1 = -\int_0^1 \frac{c_1}{2} u_1^2 dt + x(1) \text{ and } J^2 = -\int_0^1 \frac{c_2}{2} u_2^2 dt + x(1) \tag{2}$$

subject to the dynamics in Equation (1).

What we want to find out is how expenditure on advertising and the trajectory of support will change over time. This is studied in what follows. Details are provided in the appendices.

THE OPEN LOOP ADVERTISING GAME

The optimum program in this case is for each firm to accelerate its expenditure for the entire time period. The way in which the trajectory of support changes along an optimal path depends on a parameter that captures the relative cost of influencing the dynamics. Where the cost of advertising for firm one is sufficiently high relative to that of the firm two its fraction of support is decreasing. If firm one's relative cost is sufficiently low, support increases. In order to show all this, the problem for each firm is solved. Details of the analysis are in Appendix 1. What we get is

$$u_1 = \alpha_1 \frac{k_1}{c_1}(1-x) \text{ and } u_2 = -\alpha_2 \frac{k_2}{c_2} x \tag{3}$$

$$\dot{\alpha}_1 = (k_1 u_1 + k_2 u_2)\alpha_1 \text{ and } \dot{\alpha}_2 = (k_1 u_1 + k_2 u_2)\alpha 2 \tag{4}$$

where $\alpha_1(t)$ and $\alpha_2(t)$ are called the costate variables for the problem and must satisfy the terminal conditions $\alpha_1(1) = 1$ and $\alpha_2(1) = -1$ for a solution to be optimal. Solving Equation (4) gives $\alpha_1 = \alpha_2$. Writing $\alpha = \alpha_1 = -\alpha_2$ for $I = 1,2$ gives

$$\dot{u}_1 = \frac{k_1}{c_1}\alpha k_2 u_2 > 0 \text{ and } \dot{u}_2 = \frac{k_2}{c_2}\alpha k_1 u_1 > 0 \tag{5}$$

which means that both firms are increasing their expenditure for all time. Taking the second derivative of these functions shows that the rate of increase in expenditure is also increasing. This shows something of the power of the formal analysis as this result would not have been obvious, to me at least, from the set up of the marketing competition.

In order to analyze the way in which the fraction of support changes substitute Equation (5) into Equation (1). This gives

$$\dot{x} = \alpha_1 (\frac{k_1}{c_1}(1-x)^2 - \frac{k_2}{c_2}x^2) \tag{6}$$

along the optimal path. It follows that $\dot{x}$ has the same sign as

$$\varphi = 1 - 2x + x^2 \tag{7}$$

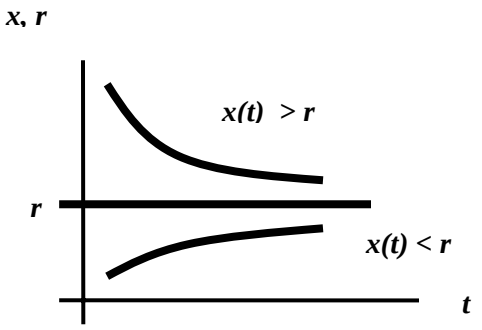
where

$$\kappa = \frac{k_2^2}{c_2^2} / \frac{k_1^2}{c_1^2}$$

For $x \leq 1$ the positive root for φ is $r = \frac{1-\sqrt{\kappa}}{1-\kappa} \kappa \neq 1$ with $\frac{\partial r}{\partial \kappa} < 0$. It follows that for $x < r$ we have $\dot{x} > 0$ and for $x > r$ we have $\dot{x} < 0$. What this tells us immediately is that, the fraction of the market going to firm one is always either increasing, decreasing or stationary. See Figure 1.

We can get a better mental picture of what is happening if we rewrite κ as $\frac{c_1}{k_1^2} / \frac{c_2}{k_2^2}$ and interpret $\frac{c_1}{k_1^2}$ as an index of the cost of impact of firm one's expenditure on advertising. Even though we are working with k_i^2 it will still have the required properties for changes in c_i and k_i. This allows us to interpret κ as the ratio of the cost of impact of firm one's advertising expenditure over the cost of impact of firm two's expenditure. Call this impact cost. This gives three cases to consider.

Figure 1: The Dynamics for *x*.



Case 1: Impact Costs Equal

(i). The firms are symmetrical in the sense that each has the same fraction of the total market at the beginning of the competition. It is immediate from Equations (3) and (7) that

$\dot{x} = 0$ and $u_i = u_2$

which means that firms are spending more and more in as time progresses in order to stand still. This is the Red Queen effect mentioned in the introduction.

(ii). The firms are asymmetrical and firm one has more initial support than firm two, perhaps as the result of brand recognition or previous reputation. In this case assume that the coefficients in the dynamic equation are the same and $k_1 = k_2 = \bar{k} > 0$ a constant. This gives

$\dot{x} < 0$

and the fraction of total support for firm one falls for the entire period and that of firm two increases. In addition it can be shown that expenditure for firm two is higher than that for firm one for the entire period. In other words, it pays the firm with the lower level of initial support to try harder for the entire period.

Case 2: Impact Cost of Firm One is Less Than Firm Two

The qualitative results are the same for the case where firms have the same initial support and for the case where initial support is greater for firm one. The fraction of support for firm one increases for all time for κ sufficiently small. For the special case $k_1 = k_2 = \bar{k}$, expenditure by firm two is increasing faster than expenditure by firm one from Equation (5). It also follows immediately from Equation (1) that expenditure for firm one is greater than for firm two for all time.

Case 3: Impact Cost of Firm One is Grater Than Firm Two

In this case support for firm one is decreasing and, if we again set $k_1 = k_2 = \bar{k}$, we get from Equation (3) that $u_1(0) = u_2(0)$. In addition firm one is increasing its expenditure faster than firm two. What seems to be happening is that firm one compensates for its lower impact cost by spending less at the beginning and accelerating its expenditure towards the end of the campaign period.

THE GAME WITH INFORMATION ON SUPPORT AND EQUAL IMPACT COSTS

The closed loop case where firms adjust their advertising expenditure according to information on the level of support at each instant is only analyzed for the parameter values $\frac{k_i^2}{c_i} = k$, for i = 1,2. The trajectory is essentially the same as the trajectory in the open loop case. When firms are asymmetrical and firm one has more initial support we also have the result that, for $k_1 = k_2 = \bar{k}$, the firm with less initial support spends more for the entire time period. An unexpected feature of this case is that firms spend less on marketing at each instant and hence across the entire time period than in the closed loop game, even thought the end results are the same. It is not clear why this is the case. One explanation might be that, if firms are able to adjust their strategies at each instant they must be able to do at least as well as, or better than, they can if they are not able to adjust. Each firm can constantly monitor the other's activities and will tend to fine tune its expenditure according to its opponent's moves at each instant. It might be conjectured that, since the opponent knows it will provoke a response it will also tend to fine tune its expenditure to get the best payoff in the situation. If firms have to commit themselves at the beginning of the game and do not have the possibility of this fine tuning they each tend to overspend.

Details of the analysis are in Appendix 2. The solution gives the dynamics in terms of the function $\varphi_i(t)$ where φ_i has the same place in the dynamics as α_I in the previous equations for u and x. We have

$$\dot{\varphi} = \frac{3k}{2}\varphi^2 \tag{8}$$

and this can be used to get explicit solutions for the trajectories. It gives us more information on the properties of the competition, however, if we explore the difference between the way in which the firms behave in the open loop game where strategies are fixed and the closed loop game where they adjust their strategies at each instant.

Comparison of Open and Closed Loop Strategies

The comment that trajectories are essentially the same is made more rigorous by saying that the firms have the same profile if their expenditure moves in basically the same direction with the same acceleration at every instant. This requires that the first and second derivatives are the same. In the case where $x_1(0) = ½$ this result is immediate from the equation for x in Appendix 2. If firm one has more initial support than firm two x is bounded away and above $x = ½$ for all $t \in [0,1)$ in both games and hence must have the same qualitative properties. In addition $u_1 < u_2$ in both games. In order to get the rest of the profile compare equations (8) and (12) .

It is also possible to get more details on the way in which the fraction of the potential pool of customers and expenditures change by looking at explicit solutions to the equations in Appendix 1 and Appendix 2. Some routine calculation shows that support for firm one is always a higher fraction of the available customers in the closed loop than in the open loop game but that the level is roughly equal at the end of the campaign. Since this is the payoff that matters the results of the campaign are more or less the same. Both firms spend less during the entire period.

THE GAME WITH FIRM ONE AS THE LEADER

The firms again formulate their strategies at the beginning of the game but it is assumed that firm one announces its plan first and then firm two formulates its strategy. It is assumed that firm one has more initial support than firm two. This might be thought of as a situation where firm one is the market leader and firm two a challenger that waits on firm one's actions. In this case we get similar trajectories to those in the first open loop game. If the impact cost for firm two is much lower than firm one support for firm one will be decreasing along the optimal path although there is a possible case where it decreases and then increases. It can also be shown that firm one is increasing its expenditure at the beginning and end of the time period.

Details of the analysis are in Appendix 3. This tells us that the firms should spend

$$u_1 = \alpha_3 \frac{k_1}{c_1}(1-x) + k_1\alpha_2\alpha_4 \text{ and } u_2 = -\alpha_2 \frac{k_2}{c_2}x \tag{9}$$

at each instant where the α terms have an analogous role to the solution in the first game.

In order to get the trajectory for the fraction of the customers going to firm one we substitute this into the equation for $\dot{x}$. In a similar manner to the previous analysis the dynamics of support is given by an equation with the relevant root written $\bar{r}$. For $x > \bar{r}$ we get $\dot{x} < 0$ and for $x < \bar{r}$ we get $\dot{x} > 0$ where $\bar{r}$ is some number such that $\dot{x} = 0$. Unlike r in the analysis of the open loop game, however, $\bar{r}$ increases as

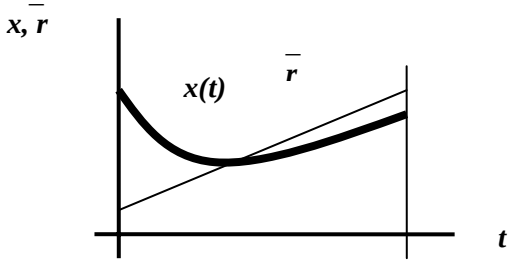
t increases. This means that we cannot rule out the possibility that $\dot{x}$ switches sign and support for firm one starts to increase at some time.

Case 1: Equal Impact Costs

Support for firm one initially declines but may increase near the end of the time period. Firm two starts by spending more than firm one and increases its expenditure for all time and firm one also increases its expenditure for some time interval near the beginning of the period. For the specific case where $\frac{k_i}{c_i} = 1$ firm one also increases its expenditure in an interval near the end.

Analysis of the values for $\bar{r}$ gives $\dot{x}(0) < 0$. For some $x(0)$ sufficiently close to 1/2 it must be the case that x is increasing in the vicinity of $x = 1$. This differs from the previous cases where the fraction of the resources for the larger firm was either monotonically increasing or decreasing over time. See figure 2 for an example.

Figure 2. Example of trajectory for $\dot{x}$ switching sign.



Some routine work using the costate values in Appendix 3 gives $u_2(0) > u_1(0)$ as in the open loop game and also $\dot{u}_2 > 0$ and $\ddot{u}_2 > 0$ for all *t*. We see that, as in the previous cases firm two is accelerating its expenditure for all time. If we consider the special case where $k_i = c_i = 1$ for $i = 1,2$ it is possible to show that firm one is accelerating its expenditure at the beginning and the end of the campaign. It seems plausible that it is accelerating its expenditure for all time, but I have not been able to develop a proof at this stage.

Case 2: Impact Cost of Firm One is Less Than Firm Two

In this case support for firm one is increasing for all time for κ sufficiently small. To see this observe that, in a similar manner to the analysis of *r* in the previous case, we can make $\bar{r}$ as close to one as we wish by letting $\kappa \to 0$. The trajectory of expenditure for firm two remains the same as in the previous case and accelerates for the complete period. If the coefficients are set at $k_i = c_i = 1$ the trajectory of expenditure for firm one is also the same at time $t = 0$ and $t = 1$ as in the previous case.

Case 3: Impact Cost of Firm One Greater Than Firm Two.

If $\kappa > m$ for some *m* sufficiently large we have $r \to \varepsilon$ for any $\varepsilon > 0$ and hence support for firm one is decreasing. Although firm one is losing support the trajectory of expenditures for firms one and two are the same as in Case 2.

CONCLUSION

This paper develops a simple model of the dynamics of a marketing competition in order to give some insights into the forces that shape the trajectory of expenditures. Its main finding is that, under the different information conditions studied, the firms mostly accelerate their expenditure for all time. This means that any observed acceleration in marketing effort can, in part, be explained by the dynamics of the struggle between the firms. Where there is asymmetry, the firm with the lower level of support tends to try harder. Its main limitation is, of course, that it involves a great deal of abstraction from reality.

It would be possible to extend this analysis in a number of ways that might make it more realistic. Among these are those in which the fraction of market shares could exhibit a jump discontinuity. It might be the case, for example, that customers are of different sizes or types, or that firms could choose a time in which the gave away free goods. Alternatively firms could be allowed to make a capital investment in a superior selling technology at a fixed price. It might also be possible to relax the assumption that the market size is fixed.

APPENDICES

The proofs are set out in a shortened form. Full details are available from the author.

Appendix 1: Open Loop Game

The problem is solved using the Pontryagin principle. The Hamiltonians are

$$H_1 = \frac{c_1}{2}u_1^2 + \alpha_1(k_1(1-x)u_1 - k_2 x u_2) \text{ and } H_2 = -\frac{c_2}{2}u_2^2 + \alpha_2(k_1(1-x)u_1 - k_2 x u_2) \quad (10)$$

where α_I for $i = 1, 2$ are the costates and are required to be continuously differentiable. Since the Hessian matrices for the Hamiltonians are negative semi-definite the necessary conditions are also sufficient. The solution for the costates is

$$\alpha_1(t) = e^{-\int_t^1 k_1 u_1(t) + k_2 u_2(t)} \text{ and } \alpha_2(t) = -e^{-\int_t^1 k_1 u_1(t) + k_2 u_2(t)} \quad (11)$$

Solution for asymmetrical support $\kappa = 1$.

To analyze the trajectory of support for firm one, note that *sign* $\dot{x}$ = *sign* (1-2*x*) and hence $\dot{x} = 0$ for $x = ½$ and x is bounded away from and above one half for all $t \in [0,1)$. This gives $\dot{x} < 0$ for all t. Substituting for $\frac{k_i^2}{c_i} = k$ into Equation (4) gives

$$\dot{\alpha} = k\alpha^2 \quad (12)$$

and this can be used to solve for α and give the required results.

Case 2. $\kappa < 1$.

To see why support for firm one increases for all t for κ sufficiently small note that for $\kappa = 0$ we have $r = 1$ and as κ increases r decreases. Taking limits $r \to \frac{1}{2}$ for $\kappa \to 1$ and hence $r \to 0$ for $\kappa \to \infty$ It follows that, for κ sufficiently small, $x(0)<r$ and $\dot{x} > 0$ for all t.

Appendix 2: Closed Loop Game

The Hamilton-Jacobi-Bellman equation is used to solve this problem. Write the value of the game for player i from time t and initial condition $x(0)$ as $\omega^i(t,x_o)$ and the partial derivative of ω^i with respect to any variable z as ω_z^i. This gives

$$-\omega_t^1 = \max_{u_1}(-\frac{c_1}{2}u_1^2 + \omega_x^1(k_1(1-x)u_1 - k_2 x u_2)) \tag{13}$$

with the analogous expression for ω_t^2. Solving this for u_1 and u_2 gives us the analogous expressions to (3) with the partial differentials ω_x^1 and ω_t^2 replacing α_1 and α_2 (Kamien and Schwartz, 1991, 259-63). Substituting the solutions back into Equation (13) and its counterpart and simplifying gives a system of two partial differential equations. Solving this gives

$$\dot{\varphi} = \frac{3k}{2}\varphi^2 \text{ which means } \varphi(t) = \frac{2}{2+3k(1-t)} \tag{13}$$

and substituting $\dot{x}$ into in Equation (7) and solving gives

$$x(t) = \frac{1}{2}(1 + (2x(0)-1)(\frac{\varphi(0)}{\varphi(t)})^{\frac{4}{3}})$$

Appendix 3: Firm One as the Leader

The Lagrangean for firm one is

$$L_1 = \frac{c_1 u_1^2}{2} + \alpha_3(k_1(1-x)u_1 - k_2 u_2 x) + \alpha_4(\frac{\partial H}{\partial x}) + \alpha_5 \frac{\partial H_2}{\partial u_2} \tag{14}$$

with H_2 given by Equation (10). $\alpha_4(t)$ is the costate associated with $\dot{\alpha}_2$ now treated as a state variable and $\alpha_5(t)$ is the multiplier for the condition that must hold for an optimum u_2. See (Basar and Olsder, 1995, 410-12). This gives us the necessary conditions for an internal solution as

$$u_1 = \alpha_3 \frac{k_1}{c_1}(1-x) + k_1\alpha_2\alpha_4 \text{ and } u_2 == \alpha_2 \frac{k_2}{c_2 x} \tag{15}$$

$$\dot{\alpha}_3 = (k_1 u_1 + k_2 u_2)\alpha_3 + k_2\alpha_5\alpha_2 \tag{16}$$

$$\dot{\alpha}_4 = -\alpha_4(k_1u_1 + k_2u_2) + k_2\alpha_5 x \qquad (17)$$

with transversality conditions $\alpha_3 = 1$ and $\alpha_4 = 0$ from (Basar and Olsder, 1995, 412). These conditions, and Equations (16) and (17) can be used to give the required results.

Analysis of $\dot{x}$

In order to establish the trajectory of support for firm one use equation (15) and the fact that $\alpha_1\alpha_4 > 0$ to get $\dot{x} = k_1(1-x)u_1 - k_2 x u_2 > \frac{k_1^2}{c_1}(1-x)^2\alpha_3 - \frac{k_2^2}{c_2}x^2\alpha$ where $\alpha = -\alpha_2$ as before. Some work on this gives $\bar{\dot{x}} > 0$ if

$$\bar{\varphi} = 1 - 2x + (1 - \kappa e^{\frac{k_2^2}{c_2}(1-t)})x^2 > 0$$

In a similar manner to the previous analysis of $\{x : \dot{x} = 0\}$ we get $\dot{x} < 0$ if $x > \bar{r}$ and $\dot{x} > 0$ where $\bar{r} = (1 - \sqrt{\kappa e^{\frac{k_2^2}{c_2}(1-t)}})(1 - ke^{\frac{k_2^2}{c_2}(1-t)})^{-1}$. This gives similar results to the open loop game with the additional time dynamic given by the fact that, for k given, $\bar{r}$ increases as t increases. This means that we cannot rule out the possibility that $\dot{x}$ switches sign and support for firm one starts to increase at some time.

Analysis for $\kappa = 1$.

The positive root is now $\bar{r}(k,t) = \frac{1 - e^{\frac{\bar{k}(1-t)}{2}}}{1 - e^{\bar{k}(1-t)}}$. Taking the limit as $t \to 1$ gives $(\bar{k},t) \to \frac{1}{2}$ and since $\frac{\partial \bar{r}}{\partial t} > 0$ we have $\bar{r}(\bar{k},0) < \frac{1}{2}$. This means that $\dot{x} < 0$. For some $x(0)$ sufficiently close to ½ it must be the case that x is increasing in the vicinity of $x = 1$.

Analysis for u_1 and u_2 for $\kappa = 1$.

u_2 is analyzed by first noting from Equation (12) and the solutions to the costates that $\alpha(0) > \alpha_3(0)$. Since $\alpha_4(0) = 0$ we get $u_2(0) > u_1(0)$ and $u_2(0) > 0$ with $\ddot{u} > 0$ for all t.

To analyze the resource expenditure for firm one consider the special case where $k_i = c_i = 1$ for $i = 1,2$. Differentiating u_1 and simplifying gives $\dot{u}_1(0) > 0$ for all values of k_i and c_1:$\kappa = 1$.

To get the sign for $\dot{u}_1$ at $t = 1$ use the solutions to the costates in Equations (16) and (17) to give $\dot{u}_1 > 0$ and $\ddot{u}_1(0) > 0$, $\ddot{u}_1(1) > 0$ as required.

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THE SOUTH AFRICAN CONSUMER MARKET

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ABSTRACT

Investors interested in the private consumer market of South Africa have to take note of the size of the market but also of the diversity of its population as well as the methods of segmentation followed by the advertising media. South Africa houses 47 million people of different race groups and has 11 official languages. The country consists of nine provinces and vast differences occur among some of them in their population composition and economic activities. In the light of the above, this paper concentrates on the calculation of the size of the South African consumer market segmented by 23 main expenditure groups, province, Living Standards Measure (LSM)® group and race. The size of the market is estimated at US$146 billion. Segmentation by province is necessary because population density and personal disposal income of the inhabitants of the provinces differ considerably. Segmentation by Living Standards Measure (LSM)® group, enables marketers to do more informed media selection for promotion. Segmentation by race is necessary since a number of cultural differences prevail.

INTRODUCTION

Companies are successful to the extent that they enter attractive markets and possess the required business skills to succeed in those markets. If one of these factors is missing, the business will not produce outstanding results. The purpose of this paper is to concentrate on the size and structure of the South African consumer market. Any business that manufacturers and/or distributes consumer products, or that delivers services to consumers, could use such information as a starting point when it considers entering the market and investing in South Africa. Those already in operation could use the information as a broad guideline on policy decisions on, location, promotion and distribution.

South Africa is a country with 47 million people consisting of different race groups and speaking 11 official languages. The country consists of nine provinces and vast differences occur among some of them in their population composition and economic activities. This paper concentrates on the calculation of the size of the South African consumer market segmented by main expenditure group, province, Living Standards Measure (LSM)® group and race. The size of the market is estimated by multiplying the average expenditure per household by the number of households falling into that segment. Market segmentation is the division of a market into parts, each of which has identifiable characteristics of actual or potential economic interest. Most often segmentation is in terms either of characteristics of the product or service, or of purchaser/user characteristics.

The following 23 main expenditure groups are distinguished in the paper: Food; clothing, footwear & accessories; housing & electricity; household fuel & light; transport; medical & dental; education; insurance & funds; recreation, entertainment & sport; furniture & household equipment; alcoholic beverages; cigarettes & tobacco; washing & cleaning materials, etc; dry-cleaning & laundry; personal care; communication; reading matter & stationery; domestic workers; support of relatives (cash); holiday/weekend (excl transport); income tax; miscellaneous and savings.

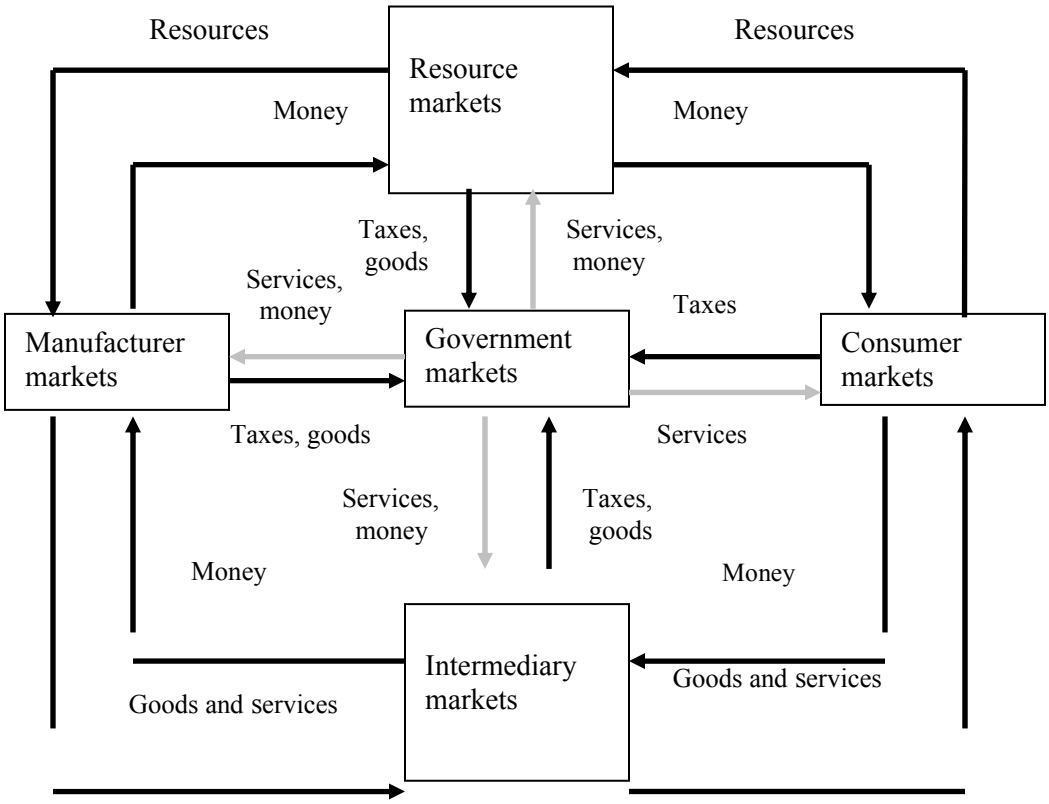
Segmentation by province is necessary because population density and personal disposal income of the inhabitants of the nine provinces differ considerably with important consequences for marketing and distribution costs. Segmentation by Living Standards Measure (LSM)® group, whereby households are classified into one of 10 LSM® groups, on the basis of their possessions and where they live, enables marketers to do more informed target marketing, especially when media selection for promotion is considered. Segmentation by race is necessary since a number of cultural differences, such as home

language, prevail among the four races in South Africa and must be taken into account in marketing strategy decisions.

LITERATURA REVIEW

Businesspeople often use the term market to cover various customer groupings. They talk about need markets (the diet-seeking market), product markets (the shoe market), demographic markets (the youth market) and geographic markets (the Botswana market); or they extend the concept to cover other markets, such as voter markets, labor markets and donor markets. Kotler (2003) distinguishes five basic markets as shown in figure 1.

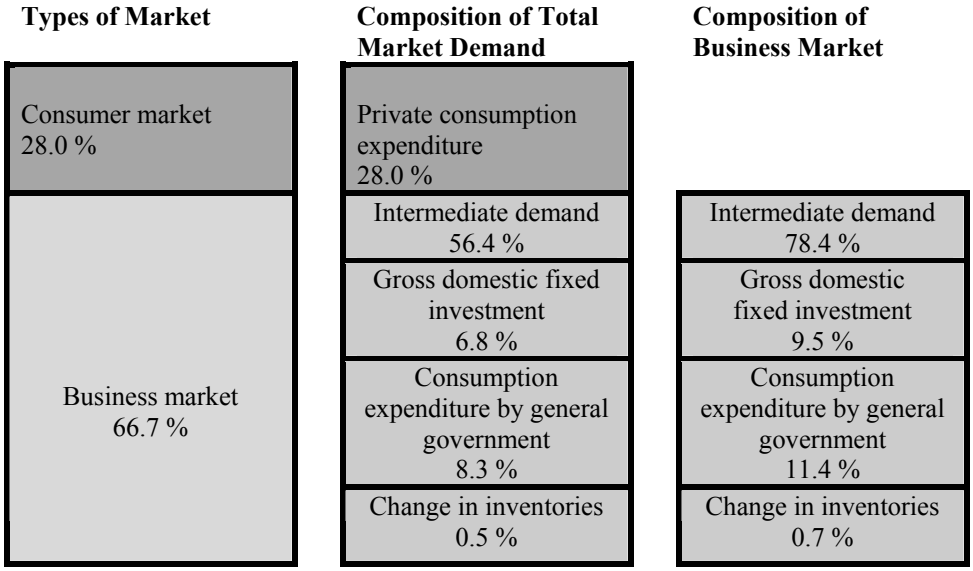
Figure 1: Structure of Flows in a Modern Exchange Economy



Source: Kotler (2003)

Manufacturers go to resource markets (raw-material markets, labor markets, money markets), buy resources and turn them into goods and services, and then sell finished products to intermediaries, who sell them to consumers. Consumers sell their labor and receive money with which they pay for goods and services. The government collects tax revenues to buy goods from resource markets, manufacturer markets and intermediary markets, and uses these goods and services to provide public services. Each nation's economy and the global economy consist of complex interacting sets of markets linked through exchange processes. The structure of the South African consumer and business market is shown in figure 2.

Figure 2: Structure of the Potential Consumer and Business Market in South Africa, 2002



Source: Calculated from Stats SA (2002a)

The purpose of this paper is to look at the size and structure of the South African consumer market. The consumer market represents expenditure on products and services by private persons and non-profit institutions. This paper excludes expenditure by non-profit institutions. Table 1 gives an overview of the South African population by province and race in 2005.

Table 1: South African Population by Race and Province, 2005

Province	**Africans/Blacks**		**Asians/Indians**		**Coloureds**		**Whites**		**Total**	
	'000	**%**	**'000**	**%**	**'000**	**%**	**'000**	**%**	**'000**	**%**
Eastern Cape	6 504 230	17.8	21 515	1.9	504 987	12.6	383 953	7.4	7 414 685	15.8
Free State	2 544 403	6.9	3 248	0.3	84 579	2.1	363 342	7.0	2 995 572	6.4
Gauteng	6 047 500	16.5	183 093	15.9	320 997	8.0	2 023 416	38.8	8 575 006	18.2
KwaZulu-Natal	7 975 282	21.8	862 978	74.9	133 044	3.3	646 356	12.4	9 617 660	20.5
Limpopo	5 707 081	15.6	6 641	0.6	9 052	0.2	130 028	2.5	5 852 802	12.5
Mpumalanga	2 925 680	8.0	13 901	1.2	22 469	0.6	303 137	5.8	3 265 187	6.9
North West	3 579 410	9.8	10 990	1.0	52 109	1.3	260 674	5.0	3 903 183	8.3
Northern Cape	313 857	0.9	2 518	0.2	478 144	12.0	119 456	2.3	913 975	1.9
Western Cape	1 046 635	2.9	47 499	4.1	2 394 538	59.9	978 044	18.8	4 466 716	9.5
RSA	**36 644 078**	**100.0**	**1 152 383**	**100.0**	**3 999 919**	**100.0**	**5 208 406**	**100.0**	**47 004 786**	**100.0**

Source: Steenkamp (2005)

Churchill and Peter (1998) describe market segmentation as a process of dividing a market into groups of potential buyers who have similar needs and wants, value perceptions or purchasing behavior. The particular market segment that a marketer selects to serve is called a target market.

Kotler (2000) distinguishes five types of consumer market segmentation, namely behavioral, demographic, geographic, multi-attribute and psychographic segmentation. Churchill and Peter (1998) distinguish the following types of segmentation: demographic and psychographic segmentation, segmentation based on thoughts and feelings, segmentation based on purchase behavior and multiple bases for segmentation (geodemography). Strydom, Cant and Jooste (2000) distinguish four types of segmentation, namely geographic, demographic, psychographic and behavioral segmentation.

The most common means of segmenting consumer markets is to use demographic segmentation, which involves dividing the market on the basis of population characteristics. This may be because of the relative ease with which the approach can be applied. Information about variables such as gender, age, race or ethnicity, income level, occupation, education level, and household size and composition is readily available from population censuses and other official statistics.

With geographic segmentation, the market is divided into different geographical units such as provinces, regions that may extend across provincial borders, countries or a group of countries such as the SADC countries, metropolitan areas, cities or neigborhoods, suburbs or townships. Population density or type of township (formal vs informal) and climate may also be important in segmentation.

While demographic and geographic segmentation are relatively simple and straightforward, psychographic segmentation is not. People are divided into different groups on the basis of lifestyle, personality, social class and/or values. Kotler (2000) distinguishes six categories, namely strivers, devouts, altruists, intimates, fun seekers and creatives. Churchill and Peter (1998) refer to the following five psychographic categories as identified by Global Scan: strivers, achievers, pressured, adapters and traditional. Strydom et al (2000) refer to the following five value groups as identified by AC Nielsen MRA's Sociomonitor Value Groups Survey: conformists, traditionals, progressives, nonconformists and todayers.

Parker (1998) suggests market segmentation by life stage and life plane, which can be seen as a combination of some elements of demographic and psychographic segmentation. A matrix approach may be used to combine both measures in order to develop a single easy-to-use tool that retains all the qualities of the measures individually, and adds a substantial depth of perspective. Segmentation of markets by life stage or age group shows how a person's lifespan can be divided into five-year periods as illustrated in table 2.

In each of these periods, peoples' circumstances, their interests and activities, and their buying behavior and levels of consumer expenditure change.

Education is the key element of segmentation by life plane or sociopolitical group. Buying behavior, store choice and consumer expenditure levels are a function of life plane. Education influences attitudes and perceptions; plays a major role in shaping expectations and aspirations; and is the key to a person's choice of career. There is also little doubt that education influences performance.

Table 2: Life Stage Model

Life Stage	Age	Age	Age	Age	Age	Age
First Generation	**1to 5**	**6 to 10**	**11 to 15**	**16 to 20**	**21 to 25**	**26 to 30**
1. Infants, toddlers & preschoolers						
2. Primary schoolers						
3. Senior schoolers						
4. Preparation years						
5. Freedom years						
6. Newlyweds & baby blues						
Second Generation	**31 to 35**	**36 to 40**	**41 to 45**	**46 to 50**	**51 to 55**	**56 to 60**
7. Homemakers						
8. Career builders						
9. Middle madness						
10. Family focused						
11. Empty nesters						
12. Easing offers						
Third Generation	**61 to 65**	**66 to 70**	**71 to 75**	**76 to 80**	**81 to 85**	**86 to 90**
13. Retirementees						
14. Down scalers						
15. Granny flatters						
16. Institutioners						

Source: Parker (1998)

As mentioned earlier, market segmentation denotes the division of a market into identifiable parts. The Esomar Social Grade has attempted to lay down guidelines for such identifiable parts for households living in the European Union (ESOMAR 1997). The development of the Esomar Social Grade is based on the philosophy of comparability of segments of people across nations in the EU. The ESOMAR Social Grade is a composite variable constructed from:

- the occupation of the main income earner in the household (the MIE)
- the terminal education age (TEA) of the MIE following a period of employment
- and in the case of non-active MIEs, the economic status of the household, based on the household ownership level of 10 selected consumer durables

The South Africa Advertising and Research Foundation has developed a measure called the New SAARF Universal Living Standards Measures (SU – LSM®), LSM hereinafter, which is better able to distinguish living standards than any single demographic variable (SAARF® 2005a). The LSM is a scale used for indicating the socioeconomic status of a group. Eight levels were initially distinguished, but these were extended to 10 in 2001. Twenty-nine variables were adopted for the classification of households into 10 different LSM groups. Each of the 29 variables carries a different weight, some positive and some negative, and the total LSM score of a household determines into which of the 10 LSM groups it falls.

Classification of People Into Different Living Standard Groups

In their monograph entitled Standard of living: An alternative measure of nations' current material well-being, Summers and Heston (1995) describe the living standards measure as a 'new index of social welfare' that renders different results about wealth distribution compared to wealth distribution results based on income measures.

Summers and Heston (1995) emphasize that, generally, social welfare is made up of a substantial number of social, economic and other variables that cannot all be captured in a single index. Rather, the living standards index comprises a limited selection of variables that can be used to explain as accurately as possible a high percentage of the variance regarding social welfare.

Although there are differences across countries with regard to what is meant by living standards, Narayan, Chambers, Shah and Petesch (2000) identified the following indicators of living standards as being fairly universal:

- having adequate food
- having adequate assets
- having work in order to derive an income
- being healthy and appearing well
- being able to marry and care for children
- having self respect and dignity
- experiencing peace and harmony
- experiencing a physically safe and secure environment
- being confident of the future
- having freedom of choice and action.

Narayan, Patel, Schafft, Rademacher and Koch-Schulte (2000) summarized the abovementioned universal aspects of living standards into four categories, namely:

- Physical Capital: This includes, inter alia, land and material possessions.
- Human Capital: This includes, inter alia, access to healthcare, education and training, and a person's labor power.
- Social Capital: This includes, inter alia, social networks, support groups and associations.
- Environmental Capital: This includes, inter alia, grass, water, trees, fish and animals.

Since the South African Living Standards Measure (LSM) groups that form the focus in this article do not include human, social and environmental capital as descriptors of living standards, attention will only be given to physical capital as a backdrop to classify households by LSM group.

Of all the aspects of physical capital that are predictors of living standards, ownership of or access to land is often cited as a key asset (Narayan, Patel et al 2000).

The second physical asset that is frequently mentioned as a strong descriptor of living standards is housing. According to Narayan, Patel et al (2000) there appears to be a correlation between living standards and housing, namely the better a person's housing, the higher his/her living standard. Seven of the 29 predictor variables of the LSM concept that are used in this article and will be explained later fall into the housing category.

A third physical capital predictor of living standards is personal or household property. This features very strongly in the South African LSMs, with 18 of the 29 predictor variables falling into this category.

The South African Advertising and Research Foundation (SAARF®) Living Standards Measure (LSM) originated during the late 1980s when SAARF® considered using a combination of variables to formulate a living standard indicator for South Africa (SAARF® 2005a). The original SAARF® LSMs were revised during 2001 when the so-called 'SAARF® Universal Living Standards Measure' concept was introduced. Whereas the 1989 to 2000 LSMs comprised 8 LSM groups, the SAARF® Universal LSM (SU-LSM®) concept was extended to comprise 10 LSMs based on a total of 29 variables. They are hot

running water; fridge/freezer; microwave oven; flush toilet in house or on plot; VCR in household; vacuum cleaner/floor polisher; washing machine; computer at home; electric stove; television set(s); tumble dryer; Telkom telephone; hi-fi/music centre; built-in kitchen sink; home security service; deep freeze; water in home or on stand; M-Net and/or DSTV; dishwasher; metropolitan dweller; sewing machine; DVD player; house/cluster/townhouse; one or more motor vehicle; domestic worker; cell phone; radio; no cell phone in household; and living in a non-urban area (SAARF® 2005a).

Total Household Expenditure

Total household expenditure can be calculated by using household expenditure data obtained through consumer surveys (direct method) and/or by using statistical series (indirect method) (Martins, Loubser & Van Wyk 1996).

Consumer Surveys

In consumer surveys the expenditure patterns of households are usually determined from a random sample of households, and then the total consumer market for a specific product in a particular region or regions is calculated by raising the sample results to the universe. Ordinary consumer surveys reveal the size of the current market for a particular product; future market potentials are determined over the short term by including questions about future buying intentions in the questionnaire. Unlike most of the other methods, consumer surveys reveal the demographic characteristics of consumers. Consumer surveys may be single-call surveys, consumer panels, or buying intention and purchasing probability surveys.

The Index Method

The index method of calculating market potentials involves the application of statistical series that reflect the relative potential demand for a specific consumer product or service, or a group of products or services, or consumer products and services in general. The relative demand for a specific product in various geographical regions can be reflected by a single index, such as population, or by several series of data combined into a single statistical index. The series are usually expressed in percentages by area for the total market and therefore indicate the share of each geographical region in the potential consumption of a specific consumer product or service, or group of products or services, or products and services in general.

Total household expenditure calculated by household income and expenditure surveys will be discussed in the following section.

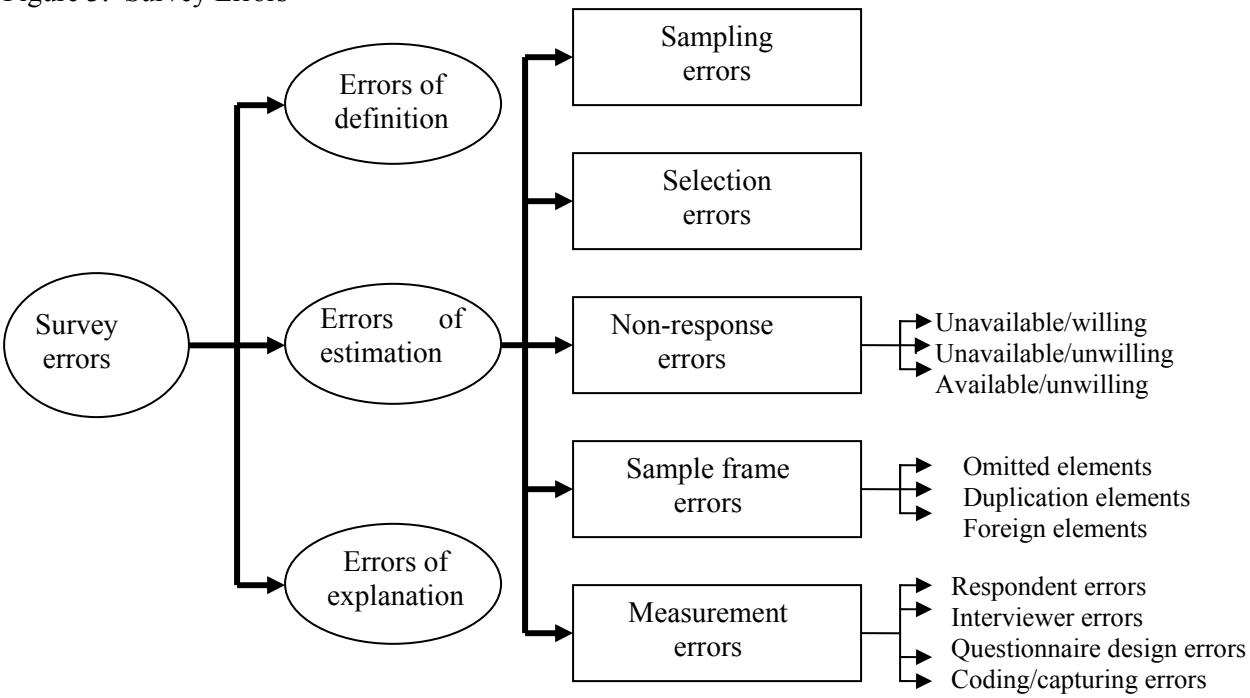
METHODOLOGY

Total household expenditure was calculated by multiplying average expenditure per household by the number of households. The average expenditure figure per household was obtained from personal face-to-face surveys conducted by means of a pre-structured questionnaire amongst 1 441 households randomly selected in the three main metropolitan areas of South Africa, namely Gauteng, the Cape Peninsula and the Durban metropolitan area (Martins 2005). No deep rural areas that are undeveloped countryside areas where many people live in poverty fell into the three mentioned areas. Therefore relatively few questionnaires were completed at these low income households. For estimations for low income households the survey information obtained from the 1 441 respondents was supplemented with information from surveys by Statistics South Africa (Stats SA 2002b).

Validity of the Research Results

Properly conducted sample surveys yield useful estimates but not exact values. Various types of errors may influence the validity of the survey results. These errors fall into three basic categories and can be portrayed as shown in figure 3.

Figure 3: Survey Errors



Source: Tustin, Ligthelm, Martins & Van Wyk (2005).

A properly developed questionnaire, proper planning and strict control over the interviewing process will minimize survey errors. The calculation of the magnitude of such errors is almost impossible. However, the statistical sample error, that is the distance between the sample mean and the true population mean, can be calculated for results from a random sample by using the following formula (Tustin et al 2004).

$$\sigma_{\bar{x}} = \frac{\sigma}{\sqrt{n}}$$

Where $\sigma_{\bar{x}}$ = standard error of the mean

σ = standard deviation of population

n = sample size

The formula for the standard deviation of the sampling distribution to determine the size of a sample can be presented as follows (Tustin et al 2004):

$$\sqrt{n} = \frac{\sigma}{\sigma_{\bar{x}}} \quad \text{or} \quad n = \frac{\sigma^2}{\sigma_{\bar{x}}^2}$$

The calculation of the sample size (n) is determined by the standard deviation of the population (σ) and the standard deviation of the sampling distribution ($\sigma_{\bar{x}}$).The standard deviation of the sampling distribution ($\sigma_{\bar{x}}$) is determined by the allowable error and confidence interval required. The allowable sample error is calculated by the formula:

$$\sigma_{\bar{x}} = \frac{E}{z}$$

Where *E* = allowable error (not sample error) and z = number of standard deviation units that will yield the desired level of confidence. For example, at a 90 % level of confidence z = 1,64.

The minimum sample size required to gather statistically reliable data on food at a 90 % confidence level and a 10 % rate of precision, calculated with the aid of expenditure data gathered for this study, is as follows: 107 for Africans/Blacks, 92 for Asians/Indians, 118 for Coloureds and 96 for Whites. The number of respondents used for the calculations in this survey is 457 Africans/Blacks, 271 Asians/Indians, 260 Coloureds and 429 Whites. A substantial statistical sample error may occur for the expenditure figures for products and services with a low frequency of purchase and also those with big differences in the price range. Users of the research results are therefore requested to exercise caution when using household expenditure information.

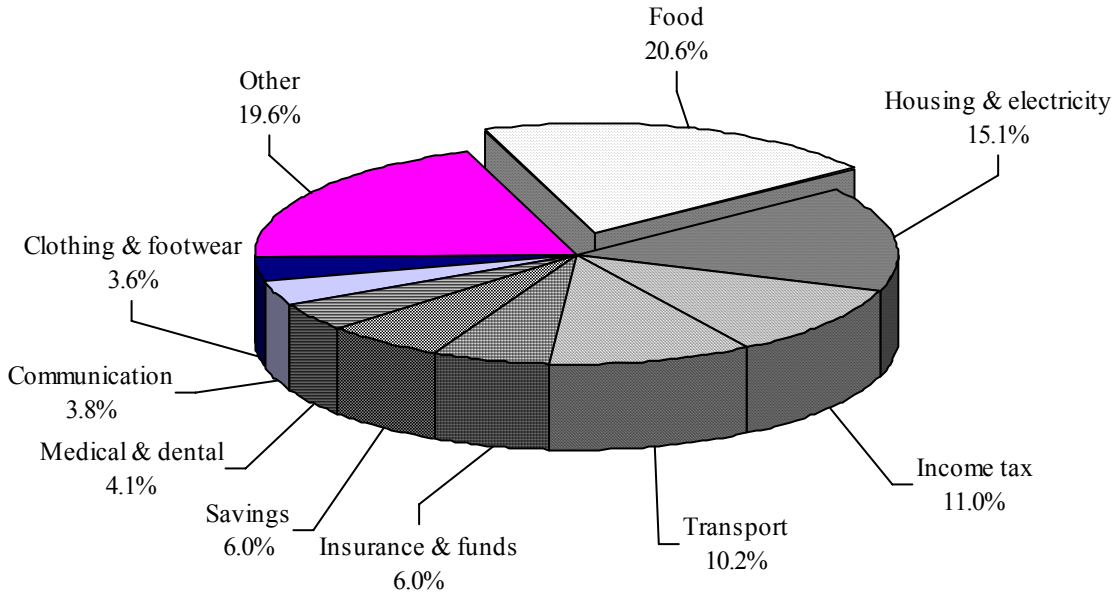
Household Expenditure in South Africa by Main Expenditure Group

Total household cash expenditure in South Africa for 2005 is estimated at US$146 billion (873 billion South African rand). Expenditure in kind is excluded from this amount. Expenditure in kind includes own produce, all gifts, support other than cash and benefits received, and imputed rent. Figure 4 shows estimated household expenditure by main expenditure group for 2005.

Household Expenditure by Province

Figure 5 depicts the share in the estimated total household cash expenditure in South Africa as well as the number of households by province in 2005. Households living in Gauteng will be responsible for an estimated 34,6 % of the total expenditure of US$146 billion, followed by the Western Cape (17.7 %) and KwaZulu-Natal (16.5 %). It is estimated that these three provinces, where 52.3 % of the total number of households of South Africa reside, will be responsible for 68.8 % of the total household cash expenditure in South Africa in 2005. The only two provinces where the share in expenditure will be higher than the share in the number of households are Gauteng (34.6 % vs 22.5 % respectively) and the Western Cape (17.7 % vs 10.1 % respectively).

Figure 4: Household Expenditure in South Africa by Main Expenditure Group, 2005



Source: Martins (2005)

In 2005, estimated expenditure on food represented 20.6 % of total estimated household expenditure followed by housing and electricity (15.1 %), income tax (11.0 %) and transport (10.2 %).

Some fundamental differences prevail in the expenditure patterns of households across provinces with regard to the major expenditure groups. A large percentage of the average household's budget accrues to food in provinces such as Limpopo and the Eastern Cape, where a relatively large percentage of households live in traditional rural areas and where household income is relatively low. The large share spent on food can be attributed to the fact that food is a basic need and therefore money is first spent on food. What is left goes to other products and services. This is not necessarily applicable to all foodstuffs, since some can be considered luxury items. Marketers, who specialize in luxury items, will concentrate their promotional efforts in Gauteng and the Western Cape before moving to the other provinces.

Household Expenditure by Population Group

In 2005, African/Black households had the largest share in total estimated household expenditure of the four population groups. According to figure 6, Africans/Blacks were responsible for 46.6 % and Whites for 41.3 % of the estimated household expenditure of US$146 billion in 2005. The share of Coloureds was 7.6 % and that of Asians/Indians 4.5 %.

As mentioned earlier, South Africa has 11 official languages. Table 3 shows the home language of the four population groups. Depending on the target market as well as type of product, marketers must take this into account in their promotion strategies. More advanced electronic items such as computers can be promoted in English since the majority of literate people will have a reasonable command of English, but

basic items such as soap powder being promoted among Africans/Blacks will have to be promoted in their home language.

Figure 5: Household Expenditure in South Africa by Province, 2005

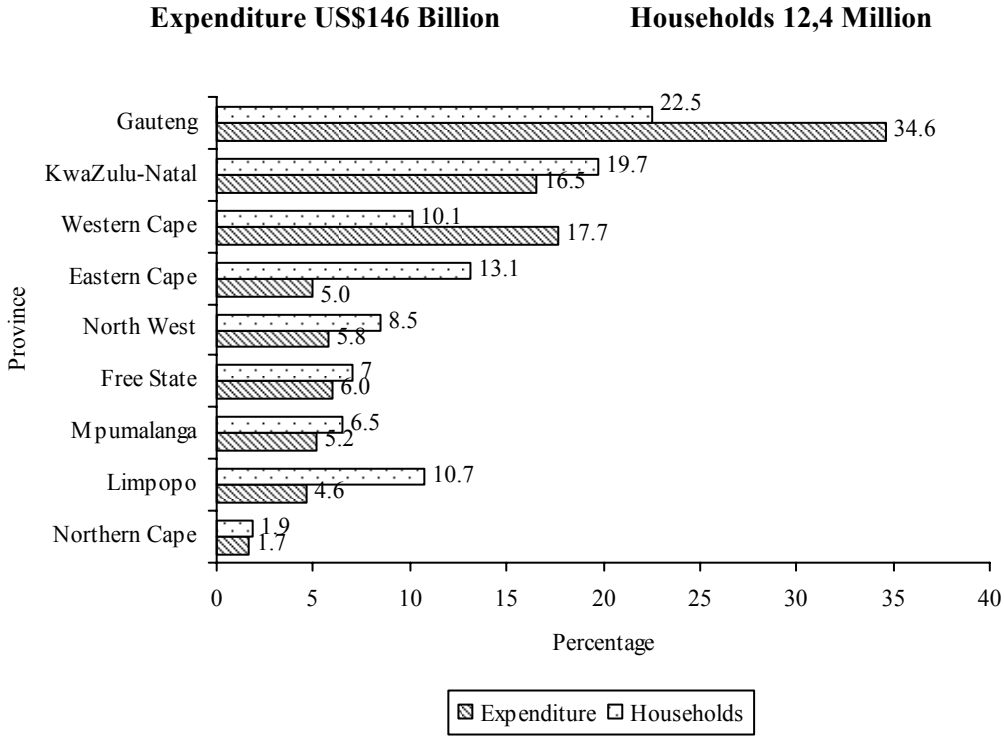


Figure 6: Household Expenditure in South Africa by Population Group, 2005

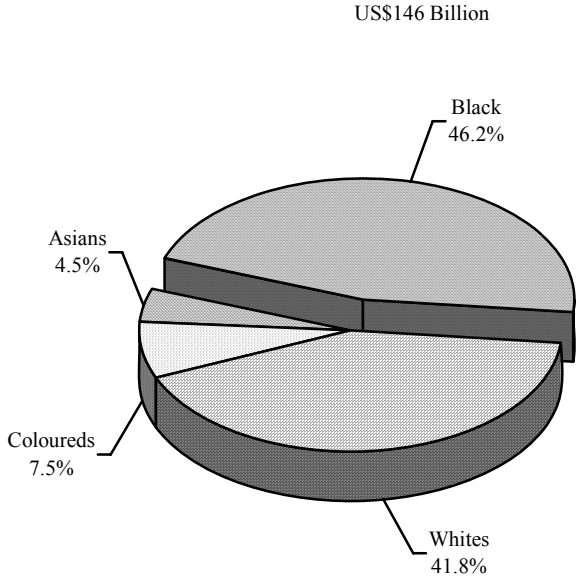


Table 3: Percentage Distribution of Home Languages Spoken according to Race

Home language	Africans/ Blacks	Asians/ Indians	Coloureds	Whites	Total
Afrikaans	0.5	1.3	78.5	57.6	15.1
English	1.7	96.2	20.5	40.5	11.1
N. Sotho	12.5	0.0	0.1	0.0	9.4
Ndebele	1.6	0.0	0.0	0.0	1.2
S. Sotho	10.6	0.0	0.1	0.0	8.0
Swazi	2.9	0.0	0.0	0.0	2.2
Tsonga	4.9	0.0	0.0	0.0	3.7
Tswana	11.2	0.2	0.3	0.1	8.4
Venda	2.6	0.0	0.0	0.1	1.9
Xhosa	22.0	0.0	0.2	0.0	16.5
Zulu	29.3	0.0	0.0	0.1	22.0
Other	0.3	2.2	0.1	1.6	0.5
Grand Total	100.0	100.0	100.0	100.0	100.0

Source: SAARF (2005b)

Household Cash Expenditure by LSM Group

Figure 7 depicts the share of LSM groups in the estimated total household cash expenditure in South Africa in 2005 compared with their share in the total number of households in South Africa. The 6.5 % of households in LSM group 10 were responsible for 30.5 % of the total household expenditure in 2005 as against the 0.7 % of the 7.8 % households falling into LSM group 1. The breakeven point is LSM group 6 where the share in total household expenditure is 14.4 % and in total number of households is 14.3 %. The figure clearly demonstrates the skewness in wealth distribution in South Africa.

Figure 7: Share of LSM Groups in Total Household Cash Expenditure and Total Number of Households 2005

Expenditure US$146 Billion Households 12.4 Million

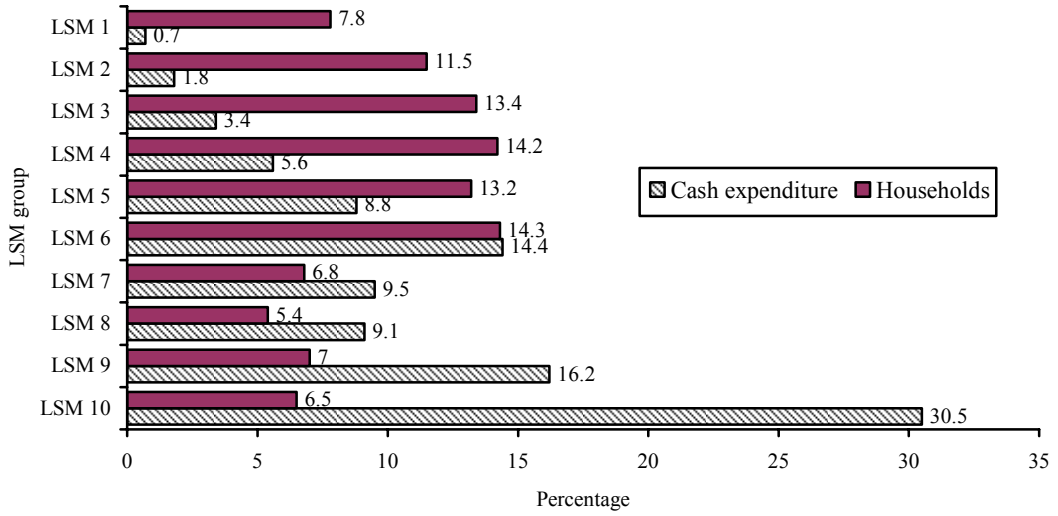


Table 4 shows the share in cash expenditure by LSM and main expenditure group as estimated for 2005. The 6.5 % of households falling into LSM group 10 were responsible for more than one third of the total household expenditure in South Africa in 2005 on the following main expenditure items:

- Holiday and weekend excursions 61.5 %
- Recreation. entertainment and sport 53.4 %
- Domestic workers 53.0 %
- Income tax 47.6 %
- Savings 45.1 %
- Medical and dental services 37.0 %
- Insurance and funds 36.9 %

The main expenditure groups where the 6.5 % of households falling into LSM group 10 will spend the least of the total cash expenditure are:

- Support of relatives 11.2 %
- Dry-cleaning and laundry 15.4 %
- Cigarettes and tobacco 15.8 %
- Food 16.6 %
- Washing and cleaning materials 17.1 %
- Household fuel and light 18.9 %
- Personal care 20.9 %

Although LSM 10 households were responsible for 30.5 % of total household expenditure in 2005 it is important that marketers and advertisers do not overlook the economic importance of the other LSM groups in their promotional budgeting. LSM 6 households spend more on food, cigarettes and tobacco and dry-cleaning and laundry and almost the same on washing and cleaning materials as LSM 10 households. The economic importance of all LSM groups becomes even more relevant when looking at the share of the LSM groups in total expenditure on specific products and services. LSM 6 households' share in expenditure on white bread was 19.4 % as against a share of 10.0 % for LSM 10 households. The shares for poultry are 17.7 % for LSM 6 and 9.9 % for LSM 10 households.

MAIN FINDINGS

The main findings of the paper can be summarized as follows:

- The total household expenditure by South African households, excluding in-kind expenditure, is estimated at US$146 billion for 2005.
- There are various options for the segmentation of consumer markets and companies must choose the option(s) best suited to them, which may differ from country to country.
- More than half (56.9 %) the household budget of South Africans is spent on food (20.6 %), housing and electricity (15.1 %), income tax (11.0 %) and transport (9.7 %).
- More than one third (34.6 %) of total household expenditure is spent by people who reside in Gauteng, one of the nine provinces in South Africa.
- Africans/Blacks spend 46.6 % of the total household expenditure in South Africa.
- The market share of LSM 1 households of only 0.7 % in comparison with the 30.5 % of the LSM 10 households points to great disparities in the wealth of the population.
- Data collected by means of household sample surveys never produce exact information and must be treated with caution.

Table 4: Share in Total Household Cash Expenditure in South Africa by Main Expenditure and LSM Group, 2005

Main Expenditure Group	LSM 1	LSM	LSM	LSM	LSM	LSM	LSM	LSM	LSM	LSM	Total
	%	%	%	%	%	%	%	%	%	%	%
Food	2.3	4.6	7.6	10.1	12.0	16.9	10.0	8.1	12.5	16.6	100.0
Clothing, footwear &	0.8	2.1	4.9	8.2	12.2	18.7	10.2	8.6	12.1	22.2	100.0
Housing & electricity	0.2	1.6	2.4	4.3	9.4	16.5	10.9	9.4	17.8	27.6	100.0
Household fuel & light	5.4	10.7	18.2	16.9	8.0	6.8	1.4	5.8	7.9	18.9	100.0
Transport	0.0	1.1	3.6	5.9	7.5	12.4	9.0	9.8	17.8	32.9	100.0
Medical & dental	0.1	0.5	0.9	1.9	6.8	13.0	9.7	9.5	20.5	37.0	100.0
Education	0.4	2.0	2.7	6.6	10.0	14.5	7.9	10.3	14.8	30.8	100.0
Insurance & funds	-	0.5	0.7	2.8	6.8	14.4	9.7	9.5	18.8	36.9	100.0
Recreation, entertainment	-	-	0.4	0.9	2.5	6.5	6.0	8.0	22.5	53.4	100.0
Furniture & household	1.0	1.6	3.6	10.5	11.1	16.8	8.9	7.7	11.6	27.3	100.0
Alcoholic beverages	0.3	1.3	5.1	10.7	12.6	13.1	8.5	9.4	15.3	23.7	100.0
Cigarettes & tobacco	0.3	1.7	2.9	5.9	10.0	20.4	13.0	12.2	18.9	15.8	100.0
Washing & cleaning	1.9	4.3	7.1	9.3	11.7	16.9	10.3	8.7	12.8	17.1	100.0
Dry-cleaning & laundry	-	-	-	2.1	21.6	28.5	6.5	9.5	16.5	15.4	100.0
Personal care	1.1	2.4	5.1	8.5	11.6	17.2	10.7	8.7	13.7	20.9	100.0
Communication	0.3	1.3	2.2	4.5	8.7	13.0	9.3	10.4	18.9	31.4	100.0
Reading matter &	-	0.5	1.3	6.3	16.8	15.0	8.2	7.6	18.0	26.2	100.0
Domestic workers	-	-	-	1.0	2.2	4.1	4.0	10.3	25.3	53.0	100.0
Support of relatives (cash)	-	-	1.2	19.9	22.5	19.9	11.0	3.8	10.4	11.2	100.0
Holiday/weekend (excl	-	0.1	0.4	0.9	0.5	5.1	5.2	7.2	19.2	61.5	100.0
Income tax	-	-	-	0.2	4.9	11.3	9.4	8.6	18.1	47.6	100.0
Miscellaneous	0.1	0.8	2.5	6.4	9.9	19.4	8.2	8.0	15.2	29.7	100.0
Savings	-	0.3	1.7	2.8	5.1	9.5	9.3	10.8	15.5	45.1	100.0
Total	0.7	1.8	3.4	5.6	8.9	14.4	9.5	9.1	16.2	30.5	100.0

CONCLUSION

Companies are successful to the extent that they enter attractive markets and possess the required business skills to succeed in those markets. If one of these factors is missing, the business will not produce outstanding results. The purpose of this paper was to concentrate on the size and structure of the South African consumer market, which is estimated at US$146 billion. An estimated US$30 billion or 20.6 % of this US$146 billion was spent on food and US$50.5 billion by households living in the Gauteng province. Africans/Blacks were responsible for US$65.1 billion and LSM 10 households for US$44.5 billion. Any business that manufactures and/or distributes consumer products, or that delivers services to consumers, could use this information as a starting point when it considers entering the market and investing in South Africa.

The information about market segments in the paper can be used as a broad guideline to direct policy decisions on location, promotion, distribution, et cetera. However, a further breakdown of the household

expenditure by expenditure item (product or service) is needed to direct decisions at a micro-level, for example, marketing mix policy decisions.

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