Is Advertising Effective or Not? Evidence from the Pharmaceutical Market

Dana Costea, Indiana University South Bend
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Editorial
From Dr. Gurumurthy Kalyanaram

In this third issue of the revamped journal, we present five diverse manuscripts. The manuscripts address the role of advertising in pharmaceutical industry, investment decisions by a multinational corporation, consumer behavior and loyalty measurement, a firm’s marketing investment decisions (e.g., advertising) and the status of commodity financing in agricultural sector. The contributors come from different disciplines and traditions. And the manuscripts offer interesting insights, and compelling theory and empirics.

In this editorial, I want to raise an important intellectual issue for our discussion. This issue is central to our study of public management and policy. What is good governance and how is related to productivity/prosperity?

The research questions are as follows.
1. Are there boundary conditions to elements of good governance?
2. Do we need pluralism in polity and economy for prosperity and development of a society (pluralism as defined by Europe and the United States)?
3. Do we good governance for increased productivity?
4. Is good governance an outcome of prosperity or is prosperity an outcome of good governance? Similarly, is productivity endogenous to good governance?

I have been studying the economic and political experiments of China and India, and the lessons from these two important societies offer inconclusive answers.

China’s experiment advises us that a minimum level of political reforms is necessary for the economy to grow even when economy is designed to be pluralistic. The experience also shows that greater political participation, even if it were incremental, facilitates inclusive development.

India’s experiment tell us that even such apparently favorable conditions as pluralism in polity and economy, reasonable economic parameters and independent judiciary are not sufficient conditions for inclusive growth or social transformation. Clearly, effective delivery of products and services is necessary for such inclusive growth.

It is evident, from China’s approach, that low-skills based model of growth will absorb larger numbers from the labor force, thus providing an opportunity for immediate and perceptible reduction in poverty. And the most significant reduction in poverty will come from improvements in agricultural productivity, as demonstrated by China’s success and India’s failure in this regard.

The basic structure of India’s economy (driven by consumer investment) places better odds on India to achieve mass-prosperity. If China manages to achieve mass-prosperity through its current economic structure (when more than one-third of the economy driven by exports-imports), it will be a new model indeed.

As we learn from the experiments of China and India, it is not possible to develop robust instruments to ensure accountability and transparency without credible democracy, i.e.,
pluralism in polity. Pluralism in economy is not enough. It is pluralism in polity that creates a self-enforcing dynamic for design of accountable governance in all sectors.

Non-democratic forms of governance, when benign and focused, may be able to deliver well in the traditional metrics (e.g., life expectancy, nourishment, infant mortality) of quality of life and inclusive development. However, such governance cannot deliver on the fundamental rights of human life: liberty and freedom.

Building and designing a robust democracy requires self-reinforcing mechanisms and institutions. Elections and ability to express preferences in political choices is necessary, but not sufficient. Freedom of speech, unimpeded access to information, credible judiciary all have to be built and fostered together simultaneously. This is clear from India’s experiment.

It is also clear that in a democracy accountable and transparent governance is more central to productive delivery of goods and services (for inclusive development) because the pushes and pulls of democracy demand more redundancies. We can infer this from Chinese and Indian experiments.

China is going to transition to some form of pluralism in polity or eventually its progress on all fronts will recede and there may even be regressive steps. Progress to pluralism in polity is not certain or inevitable, but that’s the only path to continued growth and progress in society. With pluralism both in polity and economy, greater levels of and sensitivities to inclusiveness and accountability will be organic outcomes.

Dr. Gurumurthy Kalyanaram was appointed as Dean for Research at NMIMS University in December 2011. In this capacity, he leads and facilitates the research activities and efforts across schools of the university. As the Dean for Research, Dr. Kalyanaram serves as the Editor of NMIMS Management Review. For a profile of D. Kalyanaram, please visit: http://business.nmims.edu/dr-gurumurthy-kalyanaram
Is Advertising Effective or Not?
Evidence from the Pharmaceutical Market

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Abstract
In this paper, we study the effect of direct advertising to consumers in pharmaceutical drugs. This is an empirical study. We conclude that DTCA has a greater effect on market expansion, whereas the use of contacts and detailing could lead to “business stealing.” That is, an increase in the number of contacts that a pharmaceutical company’s representative has will create an increase in the market share for that company’s drug, to the detriment of other drugs in the same therapeutic class. Our results also support the conclusions of the theoretical models and of the other empirical research that these two types of advertising have different effects on a drug’s performance on the market: Direct-to-consumer advertising serves an informative role, and the use of contacts serves a persuasive role.

Keywords: Direct-to-consumer advertising (DTCA), Pharmaceutical drugs, Physician detailing
Advertising has long been a controversial subject in the economic literature: In addition to its educational role—to inform consumers about new products and their attributes—advertising is also believed to lead to an increased demand for goods and services, sometimes at the risk of inducing unnecessary expenses for consumers. There is an ongoing debate about whether the predominant role of advertising is persuasive or informative.\(^2\)

Of particular interest amid the advertising debate is the marketing of pharmaceutical products. The pharmaceutical market is different from other markets in that the decision maker (i.e., the one who decides whether a product is needed) is not the purchaser; health care professionals recommend a drug, and patients must follow through with the purchase of the drug and the recommended course of treatment. Advertising in the pharmaceutical market is either physician oriented or direct-to-consumer, depending on the target of the ads. Physician-oriented advertising, which represents the core of pharmaceutical advertising, consists of sales visits to doctors’ offices; distribution of free samples; advertising in industry journals; and promotional spending on meetings, conferences, and other events where pharmaceutical companies promote their products. Direct-to-consumer advertising (DTCA), a newer approach by drug manufacturers, consists of ads on television, radio, or billboards; in magazines; and in other media directed toward a general audience. The pharmaceutical industry relies heavily on advertising, with marketing expenses varying between 20 and 30 percent of sales and sometimes exceeding expenditures on research and development (R&D). Although traditionally physician-oriented advertising has been the most widely used form of drug advertising, during the past decade DTCA has become increasingly important.

Direct-to-consumer advertising gained a significant role in the promotional mix for pharmaceutical companies after 1997 when the Food and Drug Administration (FDA) released new, tentative guidelines for the use of TV and other media to promote drugs directly to patients. The original guidelines, imposed in 1985, required all print ads to include an in-depth “brief summary” of the risks and side effects of advertised drugs, whereas broadcast ads were required to include a “major statement” of risks. Both types of ads were required to provide adequate information so that viewers could obtain full FDA-approved prescribing facts. Based on these requirements, two types of ads were most prevalent: (a) one that would alert consumers to the existence of certain symptoms and suggest that they consult a physician about the treatment of those symptoms without actually mentioning the name of a drug, and (b) one that reminded consumers about the existence of a drug brand without mentioning the associated conditions. The new guidelines released in 1997 eased the requirements for print and broadcast ads by requiring only the inclusion of a concise summary of risks and related information, by specifying more sources for complete information (like a toll-free number or an internet web address), and by mentioning that physicians and pharmacists were able to provide more detailed information. The 1997 DTCA tentative guidelines became final in 1999.\(^3\)


\(^2\) www.fda.gov/cder/guidance/1804fnl.htm

\(^3\) www.fda.gov/cder/guidance/1804fnl.htm
From 1997 to 2006, pharmaceutical companies’ spending on DTCA increased almost 20 percent each year, reaching a value of over $4.8 billion in 2006. Over the same period, their spending on drug advertising through other traditional promotional channels (i.e., direct promotion to physicians) increased by only 9 percent annually. Spending on research and development also increased at a rate of 9 percent annually. Despite the fast growth in DTCA expenditures, the costs incurred by promoting drugs directly to physicians ($7.2 billion) remained the largest part of advertising expenditures in 2006.

In this paper, we focus on the effect of different forms of advertising on a drug’s market share within its therapeutic class and on the size of the market for that particular class. Using sales and advertising data about drugs in four therapeutic classes, we answer the question of whether advertising leads to market expansion (i.e., the size of the market increases altogether) or to “business stealing” between different competitors in the same therapeutic class. The remainder of the paper is organized as follows: In section 2, we provide a brief review of the related literature; in section 3, we present the data that we used in our empirical estimation. In section 4, we describe the empirical model and the identification strategy. In section 5, we discuss the model estimates and in section 6, we provide concluding comments on our research results.

II. Related Literature

2.1 Theoretical Comments on the Economics of Advertising

The role of advertising in an economic market, both on a firm’s performance and on consumers’ utility and their welfare, has been the subject of many economic and industrial organization papers. Stigler (1961) and Grossman and Shapiro (1984) developed theoretical models in which they analyzed the informative role of advertising, defined as the use of advertising to send potential consumers information about existing products and their characteristics. Unlike Stigler (1961) and Grossman and Shapiro (1984), Nelson (1974) and Milgrom and Roberts (1986) constructed theoretical models in which firms used advertising to inform potential consumers about the unobserved characteristics of their products (e.g., higher quality). In these types of models, the purported higher-quality products were advertised more often, and the advertisements were viewed as a signal that the products advertised were of higher quality.

When considering the effects of advertising on consumers’ utility function and implicitly on their consumption and welfare, Becker and Murphy (1993) proposed a theoretical model that suggests that consumers believe they are increasing their utility by consuming goods that are advertised and that the prestige consumers experience from using more advertised goods increases their sense of their own welfare.

The foundation for the economics of advertising was laid in a paper by Dorfman and Steiner (1954), which showed that for a monopolist facing a

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downward sloping demand curve, the optimal “amount” of advertising is achieved when the ratio of advertising expenditure to dollar sales is equal to the ratio of advertising elasticity to price elasticity. But Dorfman and Steiner’s theory fails to account for one important aspect of advertising activity: Advertising is dynamic, and its effects last for more than one period. This characteristic of advertising is not part of their optimality condition, and that is why many authors have tried to adapt the theorem to a more realistic setting. Currently, the most predominant form of market structure is oligopoly, characterized by having a few firms produce goods that are similar but not identical; each participant in the market, therefore, must consider the actions of the other players in the market. Realizing the importance of non-price instruments like advertising, quality, or R&D strategies in differentiating products and in determining market structure, Roberts and Samuelson (1988) incorporated advertising in their competition model, which analyzed the U.S. cigarette industry. Their dynamic model of non-price competition allows advertising activity to affect both the firm’s market share and the total size of the market for high-tar and low-tar cigarettes in the U.S. from 1971 to 1982. The conclusions of their study show that advertising mainly affects market demand and that if a firm’s advertising affects another firm’s market share, that effect is seen through variations in the number of brands sold.

2.2 Related Empirical Literature on Drug Advertising

Articles in the economic and medical literature have examined various aspects of the impact of advertising on drugs’ prices, individual market share, or total market size for a drug/therapeutic class. In one of the earliest studies by Berndt et al. (1995), the authors used data on anti-ulcer drugs from 1977 to 1994 to conclude that indeed advertising positively affects pharmaceutical sales and, from the advertising forms analyzed, detailing has the biggest influence, followed by journal pages and direct-to-consumer advertising. Iizuka (2004) examined the factors that affect DTCA and concluded that newer, high-quality drugs and ones that are directed toward under-treated diseases are more often advertised. The author also emphasized the market expanding effect of DTCA. Findlay (2002) found solid evidence that advertising is an important factor in increasing drug sales to consumers. Using data on DTCA spending and prescription drug retail sales from 1999 to 2000, the author found that sales of the most advertised drugs increased at a rate of 2.3 times the increase in sales for other drugs. Ling et al. (2002) examined the effect of DTCA in the prescription drug market and also in the over-the-counter (OTC) market for anti-ulcer drugs and found some small spill over effects of DTCA for prescription drugs on same-brand OTC versions of the drugs. Rizzo (1999) studied the effect of advertising on the price elasticity of demand for the name-brand antihypertensive drug market in the United States. The author found strong evidence that detailing efforts would lower the price sensitivity, implying that consumers end up paying more because of advertising. Gonul et al. (2001) found that the use of detailing and free samples increase price sensitivity, where price was measured as the average retail price for the drug.

Brekke (2006) analyzed the effect of DTCA in the drug market, especially the interaction between consumer-oriented and physician-oriented advertising and concluded that allowing DTCA in the pharmaceutical market would increase detailing and prices. The author also emphasized the market-expanding nature of DTCA and the business-stealing nature of detailing. Calfee et al.
(2002) used data from 1995 to 2000 on cholesterol-reducing drugs to investigate the relationship between advertising and the market demand for that class, and they found that in the short run, advertising does not directly cause an increase in total market demand or in individual firms’ market shares. Using a dataset with advertising information about drugs from five therapeutic classes (i.e., antidepressants, proton-pump inhibitors, antihistamines, cholesterol-reducing drugs, and nasal sprays), Rosenthal et al. (2003) examined the relationship between advertising and market size. The authors found that DTCA primarily induced an increase of the entire market size for a specific therapeutic class but not for each particular drug. The same conclusion was reached by another study of the effect of DTCA on market size (Wosinska, 2001). The author used a dataset containing prescription drugs' claim data for cholesterol-reducing drugs in the Blue Shield of California plans and found that DTCA caused an increase in the total size of the market, but it did not always positively influence the market share for an individual drug. Parker and Pettijohn (2003) concluded that DTCA was likely to increase the request for different drugs in the same therapeutic category and also for an advertised drug. In addition, they found that once a patient required a drug, the likelihood that the physician would prescribe that drug also increased. Hurwitz and Caves (1988) analyzed the effect of generic entry on an off-patent drug's market share and also on the ad-to-sales ratio for the incumbent. The authors concluded that the leader’s market share would increase with the increase in its own advertising expenditure and would decrease with the entrant’s marketing efforts. See also Kalyanaram (2009) and Kalyanaram and Phelan (2011) for additional discussions of the DTCA effect.

As we can see from the economic theory and also from the work of previous researchers, DTCA will lead to an increase in the size of the market for a specific drug's therapeutic class and also could cause an increase in the market share of an advertised drug. Our paper follows the work of Rosenthal et al. (2003), and using a different dataset, we will show whether the most predominant role of DTCA is to expand the overall market for a therapeutic class or to steal market share from other similar drugs with the class.

III. Data and Descriptive Statistics

For our analysis, we use a dataset that contains five years (1995-1999) of detailed information about the advertising activity for drugs in four therapeutic classes: gastrointestinal, cardiovascular, cholesterol reducing, and psychotherapeutic. The dataset provides information not only about all brand-name prescription drugs but also about all of their OTC, generic versions. The four therapeutic classes comprise a total of 3,796 drugs: 1,315 psychotherapeutic drugs, 561 gastrointestinal drugs, 1,766 cardiovascular drugs, and 154 cholesterol-reducing drugs. The data set includes multiple versions of the generic and OTC drugs, depending on the manufacturer and the launch date. In some cases, there are more than 20 versions of the same generic drug, as is the case with Gemfibrozil, a drug from the cholesterol-reducing therapeutic class that is used to lower lipid levels and has 30 generic versions manufactured by different companies. For all drugs, IMS collected data on a number of sales and advertising measures including (a) total dollars; (b) total units sold; (c) contacts; (d) cost of contacts; (e) samples; (f) ads;
(g) cost of ads; (h) total promotion dollars; (i) number of dispensed new, refilled, and total prescriptions; and (j) average cost of prescriptions in the retail sector. The descriptive statistics of some of these measures, presented by therapeutic class and year, are presented in Table 1. We note that sales for drugs in the psychotherapeutic category more than doubled, from approximately $6 billion in 1995 to more than $13 billion in 1999. This is the biggest increase in sales among the four therapeutic categories. For the five years combined, cardiovascular drugs achieved the greatest sales in dollars and in units sold. (Figure 1 shows the evolution of dollar sales from 1995 to 1999 by therapeutic class). Cardiovascular drugs are also the ones with biggest value of the total promotional dollars and for each individual marketing variable, such as contacts, samples and ads. Among cardiovascular drugs, Norvasc was the leader in sales, with a combined value of nearly $4.5 billion. Prozac was the leader in the psychotherapeutic class, reaching approximately $9.6 billion dollars in sales. Among cholesterol-reducing drugs, Zocor had the biggest sales (approximately $6 billion), and among gastrointestinal drugs, Prilosec was the sales leader (approximately $11 billion). Tables 2-3 present detailed information about the top three best-selling drugs in each therapeutic class. For each drug, we present aggregate data for all five years of our study, including total dollar sales (Tdollars), total units sold (Tunits), total number of contacts (Tcontacts), total number of samples left at the doctors’ offices (Tsamples), total number of ads in the media (Tads), and total promotional expenditures (Tpromotion).

More descriptive statistics are presented in Table 4. Of the 3,796 drugs, 1,230 had no dollar sales registered; therefore, we eliminated those observations. (We would have to construct a measure of market share based on total sales for each individual drug, and without sales data, that would be impossible.) The remaining sample of 2,566 drugs contains 881 psychotherapeutic drugs, 362 gastrointestinal drugs, 1,199 cardiovascular drugs, and 124 cholesterol-reducing drugs. From these drugs, only 440 have promotional expenditures registered, and only 230 have DTCA spending in the five years comprised in our dataset.

IV. The Empirical Model

To estimate the influence of advertising on a drug’s performance in the market, we study the effect of promotional expenditure (i.e., the use of DTCA and of contacts and samples) on total sales for a therapeutic class (measured in dollars and units). We also study the effect of DTCA and detailing on a drug’s performance as measured by its market share within its therapeutic class.

Cobb Douglas demand functions are used to estimate the size of the market for a specific therapeutic class and to determine the market share for an individual drug. The market-size model has the following general form:

$$\ln q_{jt} = \alpha_j + \beta_1 \ln DTCA_{jt} + \beta_2 \ln Contacts_{jt} + \sum \delta_j X_{jt}$$

where q represents the total size of the market for therapeutic class j in a given quarter t, DTCA represents direct-to-consumer advertising expenditures, Contacts represents the cost of contacts, and Xj represents other independent variables.
The market share for a specific drug follows the following form:

$$Mk\_share_{ijt} = \alpha_{ij} + \beta_1 \ln DTCA_{ijt} + \beta_2 \ln Detailing_{ijt} + \beta_3 \ln\left(\frac{P_{ij}}{P}\right) + \sum \delta_{ij}X_{ijt}$$

We constructed the market-share variables as a ratio of total sales for a drug (i) from a therapeutic class (j) in a quarter (t), divided by total sales of all drugs in the same therapeutic category as our drug in that quarter. We will use different measures of sales, either dollar value or units sold.

$$mk\_share_{ijt} = \frac{sales_{ijt}}{class\_sales_{jt}}$$

The advertising measure DTCA represents the total value of the ads featured for a drug in a given quarter. Detailing represents the total value of contacts with physicians. We also estimate the model using the number of ads as a measure of DTCA. In this case, Detailing includes not only the total number of contacts but also the total number of free samples left at doctors’ offices.

For an individual drug’s market share, we also estimate a log model that has log of market share divided by (1-market share) as a dependent variable. We estimate this model with and without the price measure included in the equation.

$$Ln\_ratio\_mkshare_{ijt} = \alpha_{ij} + \beta_1 \ln DTCA_{ijt} + \beta_2 \ln Detailing_{ijt} + \beta_3 \ln\left(\frac{P_{ij}}{P}\right) + \sum \delta_{ij}X_{ijt}$$

where,

$$Ln\_ratio\_mkshare_{ijt} = \ln\left(\frac{mk\_share_{ijt}}{1 - mk\_share_{ijt}}\right)$$

$P_{ij}$ represents the price of drug $i$ from class $j$ in quarter $t$, and $P$ represents the average price of all drugs in therapeutic class $j$ in a given quarter $t$.

We use two different measures of price: average price per prescription—retail and average price per prescription—pharmacy. The first one represents how much the consumer pays, and the pharmacy price represents how much the pharmacy pays. The other covariates used in all models, the $X_{ij}$, are year and quarter dummies, class dummies, and the interaction of these terms.

V. Estimation Results

The estimation results are presented in Tables 5-11. Table 5 presents the estimates for the class DTCA effect on the total size of the market for a specific therapeutic category. Specifically, Table 5 shows the coefficients for the regressions when the market size is expressed in total dollars sold. For each model, we present multiple specifications depending on what dummy variables (and interactions) are included. In addition, for all the specifications we present the random effects estimates and the fixed effects ones. As evident from the tables, the DTCA elasticities are between 0.004 and 0.123, suggesting that a 10 percent increase in DTCA expenditures could lead to an increase in market size between .04 and 1.23 percent. The coefficients are bigger for cases in which we express the size of the market in terms of total units sold.

Our results are of the same magnitude as those of Rosenthal et al. (2003), who found that a 10 percent increase in DTCA spending would result in approximately a 1 percent increase in sales, other variables remaining equal. The elasticity of detailing, represented in our case by the number of dollars spent on physicians’ contacts, suggests that
a 10 percent increase in detailing expenses could lead to an increase in class market size of up to 8 percent. In particular, when market size is expressed in total units sold and the interaction terms between class dummies and quarter dummies are not included in the regression, and when the coefficient of detailing is negative and significant, we can infer that in fact, detailing could lower the total class market size. Tables 6 and 7 present the coefficients for the models when the advertising activity is expressed in terms of the number of (a) ads, (b) contacts with the physicians, and (c) free samples. The coefficients for DTCA activity range between 0.032 and 0.110, indicating once again that a 10 percent increase in the number of ads will increase the total size of a market for a therapeutic class by approximately 1 percent. The coefficients for contacts and number of samples are also statistically significant, sometimes positive and sometimes negative.

Beginning with Table 8, we present estimates for an individual drug’s performance. The market share is expressed in dollars (Tables 8 and 11) or units sold (Tables 9 and 10). The coefficients for DTCA are positive, significant, and of a magnitude lower than those from the class market size models; therefore, we can conclude that DTCA has a greater market-expanding effect than a business-stealing effect. In other words, DTCA has a greater effect on overall market expansion for a therapeutic category than it does on the expansion of one drug in a therapeutic category at the expense of another drug in that same category. The detailing coefficients are positive and significant, and the coefficients on drug prices are significant and of the right sign only in a few specifications, indicating that in fact, the price measures that we have are not a perfect proxy for the actual prices that consumers pay for the drugs.

Tables 12 shows the estimates from the regressions in which price measures were not included. For the models with market share as the dependent variable, the coefficients of the DTCA variable are positive, significant, and of the same magnitude as in the previous models. The detailing activity estimates also are positive and significant.

VI. Summary and Conclusions
In this paper, we have analyzed the influence of different types of advertising on a drug’s performance on the market. Due to the specific characteristics of the pharmaceutical market, wherein the final consumer-purchaser (i.e., the patient) is not the one who decides whether a drug is needed (i.e., the health care professional is the decider), advertising activity is targeted both toward patients through direct-to-consumer advertising and physicians through detailing and contacts. Using a dataset containing advertising and sales information about all the drugs in four therapeutic classes for a period of four years (1995 to 1999), we have evaluated the different effects of DTCA and contacts on a drug’s market share and on the total size of the market for an entire therapeutic class. The empirical results show that DTCA has the primary effect of increasing the total size of the market for a therapeutic class and has a small effect on the individual market share for a specific drug. If we examine the individual market share estimates, however, Contacts coefficients are always of greater magnitude than DTCA coefficients, suggesting that the Contacts coefficient has more influence in determining the market share of a specific drug within a therapeutic class.

We conclude, therefore, that DTCA has a greater effect on market expansion, whereas the use of contacts and detailing could lead to “business
stealing.” That is, an increase in the number of contacts that a pharmaceutical company’s representative has will create an increase in the market share for that company’s drug, to the detriment of other drugs in the same therapeutic class. Our results also support the conclusions of the theoretical models and of the other empirical research that these two types of advertising have different effects on a drug’s performance on the market: Direct-to-consumer advertising serves an informative role, and the use of contacts serves a persuasive role.

**Figure 1 Total dollar sales (Thousands)**

![Graph showing total dollar sales for different categories from 1995 to 1999](image)
### Table 1. Descriptive Statistics

#### Total dollars (thousands)

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<td>4,751,286</td>
<td>5,928,088</td>
<td>3,933,351</td>
<td>1,459,360.44</td>
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<td>PSYCHOTHERAPEUTICS</td>
<td>6,044,371</td>
<td>7,140,644</td>
<td>8,599,046</td>
<td>10,911,181</td>
<td>13,087,338</td>
<td>9,152,516</td>
<td>2,859,850.34</td>
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<tr>
<td>CARDIOVASCULARS</td>
<td>9,543,870</td>
<td>9,852,154</td>
<td>10,522,438</td>
<td>11,313,539</td>
<td>12,288,055</td>
<td>10,704,011</td>
<td>1,116,386.58</td>
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#### Total units (thousands)

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<tbody>
<tr>
<td>GASTROINTESTINALS</td>
<td>112,406</td>
<td>158,366</td>
<td>149,045</td>
<td>119,815</td>
<td>113,916</td>
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<tr>
<td>CHOLESTEROL REDUCERS</td>
<td>25,665</td>
<td>29,643</td>
<td>34,592</td>
<td>36,462</td>
<td>42,117</td>
<td>37,696</td>
<td>6,330.30</td>
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<td>PSYCHOTHERAPEUTICS</td>
<td>110,298</td>
<td>120,871</td>
<td>128,235</td>
<td>141,921</td>
<td>149,080</td>
<td>130,081</td>
<td>15,658.44</td>
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<td>CARDIOVASCULARS</td>
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<td>170,279</td>
<td>175,154</td>
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#### Contacts (thousands)

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<th></th>
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</thead>
<tbody>
<tr>
<td>GASTROINTESTINALS</td>
<td>2,897</td>
<td>2,518</td>
<td>2,094</td>
<td>1,890</td>
<td>2,019</td>
<td>2,284</td>
<td>415.96</td>
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<tr>
<td>CHOLESTEROL REDUCERS</td>
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<td>1,949</td>
<td>2,967</td>
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<td>3,170</td>
<td>2,675</td>
<td>717.71</td>
</tr>
<tr>
<td>PSYCHOTHERAPEUTICS</td>
<td>3,597</td>
<td>3,630</td>
<td>4,075</td>
<td>4,630</td>
<td>5,003</td>
<td>4,187</td>
<td>619.07</td>
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<tr>
<td>CARDIOVASCULARS</td>
<td>8,453</td>
<td>6,944</td>
<td>7,287</td>
<td>7,446</td>
<td>6,936</td>
<td>7,413</td>
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#### Samples (thousands)

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</thead>
<tbody>
<tr>
<td>GASTROINTESTINALS</td>
<td>53,771</td>
<td>47,872</td>
<td>53,218</td>
<td>43,136</td>
<td>41,731</td>
<td>47,946</td>
<td>5,556.36</td>
</tr>
<tr>
<td>CHOLESTEROL REDUCERS</td>
<td>18,683</td>
<td>25,785</td>
<td>37,882</td>
<td>37,399</td>
<td>31,425</td>
<td>30,235</td>
<td>8,131.22</td>
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<tr>
<td>PSYCHOTHERAPEUTICS</td>
<td>28,545</td>
<td>36,433</td>
<td>41,340</td>
<td>44,253</td>
<td>47,928</td>
<td>39,700</td>
<td>7,520.42</td>
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<tr>
<td>CARDIOVASCULARS</td>
<td>114,852</td>
<td>111,817</td>
<td>105,120</td>
<td>95,328</td>
<td>91,516</td>
<td>103,727</td>
<td>10,134.17</td>
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</table>

#### Ads (absolute)

<table>
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</thead>
<tbody>
<tr>
<td>GASTROINTESTINALS</td>
<td>1,541</td>
<td>2,042</td>
<td>1,302</td>
<td>1,119</td>
<td>1,545</td>
<td>1,510</td>
<td>346.90</td>
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<tr>
<td>CHOLESTEROL REDUCERS</td>
<td>628</td>
<td>793</td>
<td>1,477</td>
<td>1,485</td>
<td>1,040</td>
<td>1,085</td>
<td>390.45</td>
</tr>
<tr>
<td>PSYCHOTHERAPEUTICS</td>
<td>2,223</td>
<td>2,733</td>
<td>3,194</td>
<td>2,954</td>
<td>3,178</td>
<td>2,656</td>
<td>401.05</td>
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<tr>
<td>CARDIOVASCULARS</td>
<td>5,496</td>
<td>6,962</td>
<td>6,953</td>
<td>5,895</td>
<td>4,652</td>
<td>5,992</td>
<td>989.37</td>
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</table>

#### Total promotion dollars (thousands)

<table>
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<tr>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>GASTROINTESTINALS</td>
<td>186,458</td>
<td>167,796</td>
<td>148,942</td>
<td>154,840</td>
<td>188,538</td>
<td>169,315</td>
<td>17,960.36</td>
</tr>
<tr>
<td>CHOLESTEROL REDUCERS</td>
<td>105,420</td>
<td>115,431</td>
<td>223,412</td>
<td>260,491</td>
<td>234,001</td>
<td>187,751</td>
<td>71,955.63</td>
</tr>
<tr>
<td>PSYCHOTHERAPEUTICS</td>
<td>252,520</td>
<td>258,400</td>
<td>313,763</td>
<td>377,414</td>
<td>453,620</td>
<td>331,143</td>
<td>85,024.71</td>
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<tr>
<td>CARDIOVASCULARS</td>
<td>514,618</td>
<td>460,196</td>
<td>546,401</td>
<td>554,208</td>
<td>531,251</td>
<td>521,335</td>
<td>37,384.36</td>
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</table>

#### Average Price per Prescription - Retail

<table>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>GASTROINTESTINALS</td>
<td>61.08</td>
<td>66.07</td>
<td>70.69</td>
<td>72.19</td>
<td>78.5</td>
<td>70</td>
<td>6.56</td>
</tr>
<tr>
<td>CHOLESTEROL REDUCERS</td>
<td>62.5</td>
<td>64.9</td>
<td>67.08</td>
<td>67.73</td>
<td>70.07</td>
<td>66</td>
<td>2.88</td>
</tr>
<tr>
<td>PSYCHOTHERAPEUTICS</td>
<td>33.55</td>
<td>36.95</td>
<td>41.93</td>
<td>48.38</td>
<td>53.63</td>
<td>43</td>
<td>8.20</td>
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<tr>
<td>CARDIOVASCULARS</td>
<td>33.24</td>
<td>33.49</td>
<td>33.91</td>
<td>33.86</td>
<td>34.6</td>
<td>34</td>
<td>0.52</td>
</tr>
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</table>

#### Average Price per Prescription - Pharmacy

<table>
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<tr>
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<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>GASTROINTESTINALS</td>
<td>58.83</td>
<td>63.15</td>
<td>68.03</td>
<td>72.35</td>
<td>79.68</td>
<td>68</td>
<td>8.10</td>
</tr>
<tr>
<td>CHOLESTEROL REDUCERS</td>
<td>61.38</td>
<td>63.31</td>
<td>65.68</td>
<td>67.14</td>
<td>69.6</td>
<td>65</td>
<td>3.21</td>
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<tr>
<td>PSYCHOTHERAPEUTICS</td>
<td>30.45</td>
<td>33.84</td>
<td>39.06</td>
<td>46.71</td>
<td>52.75</td>
<td>41</td>
<td>9.17</td>
</tr>
<tr>
<td>CARDIOVASCULARS</td>
<td>30.61</td>
<td>30.74</td>
<td>31.67</td>
<td>32.62</td>
<td>33.86</td>
<td>32</td>
<td>1.36</td>
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### Tables 2-3. Top 3 selling drugs, by therapeutic class (1995-1999)

<table>
<thead>
<tr>
<th>Class</th>
<th>Name</th>
<th>Tdollars (thousands)</th>
<th>Tunits (thousands)</th>
<th>Tcontacts (thousands)</th>
<th>Tsamples (thousands)</th>
<th>Tads (absolute)</th>
<th>Totalpromo (thousands)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cardiovascular</td>
<td>NORVASC</td>
<td>4,481,295</td>
<td>33,908</td>
<td>3,738</td>
<td>59,083</td>
<td>3,631</td>
<td>256,817</td>
</tr>
<tr>
<td>Cardiovascular</td>
<td>VASOTEC</td>
<td>4,064,207</td>
<td>43,012</td>
<td>1,413</td>
<td>27,784</td>
<td>364</td>
<td>63,851</td>
</tr>
<tr>
<td>Cardiovascular</td>
<td>PROCARDIA-XL</td>
<td>4,007,301</td>
<td>18,387</td>
<td>830</td>
<td>14,569</td>
<td>824</td>
<td>40,637</td>
</tr>
<tr>
<td>Cholesterol drugs</td>
<td>ZOCOR</td>
<td>6,152,484</td>
<td>41,330</td>
<td>3,143</td>
<td>46,893</td>
<td>900</td>
<td>196,964</td>
</tr>
<tr>
<td>Cholesterol drugs</td>
<td>LIPICTOR</td>
<td>4,546,878</td>
<td>26,689</td>
<td>2,865</td>
<td>30,127</td>
<td>1,473</td>
<td>209,345</td>
</tr>
<tr>
<td>Cholesterol drugs</td>
<td>PRAVACHOL</td>
<td>3,562,922</td>
<td>21,003</td>
<td>2,898</td>
<td>31,640</td>
<td>1,059</td>
<td>202,281</td>
</tr>
<tr>
<td>Gastrointestinals</td>
<td>PRILOSEC</td>
<td>11,700,000</td>
<td>106,702</td>
<td>2,175</td>
<td>39,058</td>
<td>1,932</td>
<td>204,595</td>
</tr>
<tr>
<td>Gastrointestinals</td>
<td>ZANTAC</td>
<td>5,554,843</td>
<td>48,305</td>
<td>1,400</td>
<td>31,287</td>
<td>37</td>
<td>77,509</td>
</tr>
<tr>
<td>Gastrointestinals</td>
<td>PREVACID</td>
<td>4,316,612</td>
<td>20,976</td>
<td>1,215</td>
<td>20,401</td>
<td>1,120</td>
<td>148,950</td>
</tr>
<tr>
<td>Psychotherapeutics</td>
<td>PROZAC</td>
<td>9,609,635</td>
<td>55,121</td>
<td>3,442</td>
<td>38,713</td>
<td>2,080</td>
<td>283,645</td>
</tr>
<tr>
<td>Psychotherapeutics</td>
<td>ZOLOFT</td>
<td>6,127,512</td>
<td>31,304</td>
<td>3,589</td>
<td>40,910</td>
<td>2,547</td>
<td>257,928</td>
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<tr>
<td>Psychotherapeutics</td>
<td>PAXIL</td>
<td>4,697,147</td>
<td>46,853</td>
<td>3,362</td>
<td>40,971</td>
<td>1,036</td>
<td>240,614</td>
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</table>

### Table 4. Promotion information for the drugs that have nonzero sales

<table>
<thead>
<tr>
<th>Class</th>
<th>Tpromo =0</th>
<th>0&lt;Tpromo&lt;100(thousands)</th>
<th>Tpromo&gt;=100(thousands)</th>
<th>total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cardiovascular</td>
<td>974</td>
<td>107</td>
<td>118</td>
<td>1199</td>
</tr>
<tr>
<td>Cholesterol reducers</td>
<td>100</td>
<td>8</td>
<td>16</td>
<td>124</td>
</tr>
<tr>
<td>Gastrointestinals</td>
<td>282</td>
<td>37</td>
<td>43</td>
<td>362</td>
</tr>
<tr>
<td>Psychotherapeutics</td>
<td>770</td>
<td>59</td>
<td>52</td>
<td>881</td>
</tr>
<tr>
<td>Total</td>
<td>2126</td>
<td>211</td>
<td>229</td>
<td>2566</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Class</th>
<th>Tcostofad=0</th>
<th>0&lt;Tcostofad&lt;100(thousands)</th>
<th>Tcostofad&gt;=100(thousands)</th>
<th>total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cardiovascular</td>
<td>1085</td>
<td>48</td>
<td>66</td>
<td>1199</td>
</tr>
<tr>
<td>Cholesterol reducers</td>
<td>107</td>
<td>7</td>
<td>10</td>
<td>124</td>
</tr>
<tr>
<td>Gastrointestinals</td>
<td>312</td>
<td>22</td>
<td>28</td>
<td>362</td>
</tr>
<tr>
<td>Psychotherapeutics</td>
<td>832</td>
<td>15</td>
<td>34</td>
<td>881</td>
</tr>
<tr>
<td>Total</td>
<td>2336</td>
<td>92</td>
<td>138</td>
<td>2566</td>
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</table>
### Table 5. The effect of total class DTCA (value of ads) on total market size (dollar value)

<table>
<thead>
<tr>
<th></th>
<th>In total dollars RE</th>
<th>In total dollars FE</th>
<th>In total dollars RE</th>
<th>In total dollars FE</th>
</tr>
</thead>
<tbody>
<tr>
<td>ln class DTCA</td>
<td>0.017</td>
<td>0.017</td>
<td>0.004</td>
<td>0.004</td>
</tr>
<tr>
<td></td>
<td>(11.52)**</td>
<td>(11.08)**</td>
<td>(6.88)**</td>
<td>(6.67)**</td>
</tr>
<tr>
<td>ln class contacts</td>
<td>0.524</td>
<td>0.525</td>
<td>0.045</td>
<td>0.045</td>
</tr>
<tr>
<td></td>
<td>(161.44)**</td>
<td>(157.35)**</td>
<td>(24.72)**</td>
<td>(24.08)**</td>
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<tr>
<td>class dummies</td>
<td>yes</td>
<td>no</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>year dummies</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>quarter</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>class &amp; quarter</td>
<td>no</td>
<td>no</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>Observations</td>
<td>51,380</td>
<td>51,380</td>
<td>51,380</td>
<td>51,380</td>
</tr>
<tr>
<td>Number of groups</td>
<td>2,566</td>
<td>2,566</td>
<td>2,566</td>
<td>2,566</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.90</td>
<td>0.99</td>
<td>0.90</td>
<td>0.99</td>
</tr>
</tbody>
</table>

Robust z statistics in parentheses
* significant at 5%; ** significant at 1%

### Table 6. The effect of total class DTCA (number of ads) on total market size (dollar value)

<table>
<thead>
<tr>
<th></th>
<th>In total dollars RE</th>
<th>In total dollars FE</th>
<th>In total dollars RE</th>
<th>In total dollars FE</th>
</tr>
</thead>
<tbody>
<tr>
<td>ln class ads</td>
<td>0.100</td>
<td>0.099</td>
<td>0.032</td>
<td>0.032</td>
</tr>
<tr>
<td></td>
<td>(65.41)**</td>
<td>(63.54)**</td>
<td>(30.19)**</td>
<td>(29.41)**</td>
</tr>
<tr>
<td>ln class contacts</td>
<td>0.031</td>
<td>0.032</td>
<td>-0.008</td>
<td>-0.008</td>
</tr>
<tr>
<td></td>
<td>(6.42)**</td>
<td>(6.42)**</td>
<td>(3.04)**</td>
<td>(2.95)**</td>
</tr>
<tr>
<td>ln class samples</td>
<td>0.484</td>
<td>0.484</td>
<td>0.087</td>
<td>0.087</td>
</tr>
<tr>
<td></td>
<td>(147.93)**</td>
<td>(144.03)**</td>
<td>(33.41)**</td>
<td>(32.56)**</td>
</tr>
<tr>
<td>class dummies</td>
<td>yes</td>
<td>no</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>year dummies</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>quarter dummies</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>year &amp; class</td>
<td>no</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Observations</td>
<td>51,380</td>
<td>51,380</td>
<td>51,380</td>
<td>51,380</td>
</tr>
<tr>
<td>Number of group</td>
<td>2,566</td>
<td>2,566</td>
<td>2,566</td>
<td>2,566</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.95</td>
<td>0.99</td>
<td>0.95</td>
<td>0.99</td>
</tr>
</tbody>
</table>

Robust z statistics in parentheses
* significant at 5%; ** significant at 1%
### Table 7. The effect of total class DTCA (number of ads) on total market size (units sold)

<table>
<thead>
<tr>
<th></th>
<th>In total units sold RE</th>
<th>In total units sold FE</th>
<th>In total units sold RE</th>
<th>In total units sold FE</th>
</tr>
</thead>
<tbody>
<tr>
<td>ln class ads</td>
<td>0.052</td>
<td>0.051</td>
<td>0.110</td>
<td>0.110</td>
</tr>
<tr>
<td></td>
<td>(16.36)**</td>
<td>(15.71)**</td>
<td>(62.60)**</td>
<td>(60.85)**</td>
</tr>
<tr>
<td>ln class contacts</td>
<td>0.252</td>
<td>0.254</td>
<td>-0.148</td>
<td>-0.147</td>
</tr>
<tr>
<td></td>
<td>(25.78)**</td>
<td>(25.42)**</td>
<td>(32.99)**</td>
<td>(31.92)**</td>
</tr>
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<td>-0.029</td>
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<td>-0.156</td>
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<tr>
<td></td>
<td>(4.66)**</td>
<td>(4.57)**</td>
<td>(25.17)**</td>
<td>(24.28)**</td>
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<td>class dummies</td>
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<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>year dummies</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
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<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>year &amp; class</td>
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<td>no</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>class &amp; quarter</td>
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<td>no</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>Observations</td>
<td>51,380</td>
<td>51,380</td>
<td>51,380</td>
<td>51,380</td>
</tr>
<tr>
<td>Number of groups</td>
<td>2,566</td>
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<td>2,566</td>
</tr>
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<td>R-squared</td>
<td>0.51</td>
<td></td>
<td>0.84</td>
<td></td>
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</table>

Robust z statistics in parentheses

* significant at 5%; ** significant at 1%
### Table 8. The effect of DTCA on market share (dollar value)

<table>
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<tr>
<th></th>
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<th>mk_share_dollars</th>
<th>mk_share_dollars</th>
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<tbody>
<tr>
<td></td>
<td>RE</td>
<td>FE</td>
<td>RE</td>
<td>FE</td>
</tr>
<tr>
<td>In drug DTCA</td>
<td>0.001</td>
<td>0.001</td>
<td>0.001</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td>(2.00)*</td>
<td>(1.78)</td>
<td>(2.41)*</td>
<td>(2.26)*</td>
</tr>
<tr>
<td>In drug Contacts</td>
<td>0.006</td>
<td>0.004</td>
<td>0.005</td>
<td>0.004</td>
</tr>
<tr>
<td></td>
<td>(5.68)**</td>
<td>(3.58)**</td>
<td>(5.68)**</td>
<td>(3.48)**</td>
</tr>
<tr>
<td>In ratio retail prices</td>
<td>-0.004</td>
<td>-0.007</td>
<td>0.002</td>
<td>0.002</td>
</tr>
<tr>
<td></td>
<td>(1.36)</td>
<td>(2.29)*</td>
<td>(0.74)</td>
<td>(0.49)</td>
</tr>
<tr>
<td>quarter dummies</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
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<tr>
<td>class dummies</td>
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<td>no</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>year dummies</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>year &amp; class</td>
<td>no</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Observations</td>
<td>1374</td>
<td>1374</td>
<td>1374</td>
<td>1374</td>
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<tr>
<td>Number of groups</td>
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<td>149</td>
<td>149</td>
<td>149</td>
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<tr>
<td>R-squared</td>
<td>0.11</td>
<td>0.13</td>
<td>0.12</td>
<td>0.13</td>
</tr>
</tbody>
</table>

Absolute value of z statistics in parentheses
* significant at 5%; ** significant at 1%

### Table 9. The effect of DTCA on market share (units sold)

<table>
<thead>
<tr>
<th></th>
<th>mk_share_units</th>
<th>mk_share_units</th>
<th>mk_share_units</th>
<th>mk_share_units</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>RE</td>
<td>FE</td>
<td>RE</td>
<td>FE</td>
</tr>
<tr>
<td>In drug DTCA</td>
<td>0.001</td>
<td>0.001</td>
<td>0.001</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td>(2.40)*</td>
<td>(2.17)*</td>
<td>(2.59)**</td>
<td>(2.37)*</td>
</tr>
<tr>
<td>In drug Contacts</td>
<td>0.003</td>
<td>0.002</td>
<td>0.003</td>
<td>0.002</td>
</tr>
<tr>
<td></td>
<td>(4.53)**</td>
<td>(2.46)*</td>
<td>(4.54)**</td>
<td>(2.01)*</td>
</tr>
<tr>
<td>In ratio retail prices</td>
<td>-0.001</td>
<td>-0.001</td>
<td>0.001</td>
<td>0.003</td>
</tr>
<tr>
<td></td>
<td>(0.32)</td>
<td>(0.32)</td>
<td>(0.42)</td>
<td>(1.06)</td>
</tr>
<tr>
<td>quarter dummies</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>class dummies</td>
<td>yes</td>
<td>no</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>year dummies</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>year &amp; class</td>
<td>no</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Observations</td>
<td>1374</td>
<td>1374</td>
<td>1374</td>
<td>1374</td>
</tr>
<tr>
<td>Number of group (class name company date)</td>
<td>149</td>
<td>149</td>
<td>149</td>
<td>149</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.12</td>
<td>0.18</td>
<td>0.12</td>
<td>0.19</td>
</tr>
</tbody>
</table>

Absolute value of z statistics in parentheses
* significant at 5%; ** significant at 1%
### Table 10. The effect of DTCA on market share (units sold)

<table>
<thead>
<tr>
<th></th>
<th>ln_ratio_mkshare_units</th>
<th>ln_ratio_mkshare_units</th>
<th>ln_ratio_mkshare_units</th>
<th>ln_ratio_mkshare_units</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>RE</td>
<td>FE</td>
<td>RE</td>
<td>FE</td>
</tr>
<tr>
<td>In drug DTCA</td>
<td>0.023</td>
<td>0.020</td>
<td>0.023</td>
<td>0.020</td>
</tr>
<tr>
<td></td>
<td>(1.99)*</td>
<td>(1.76)</td>
<td>(2.05)*</td>
<td>(1.82)</td>
</tr>
<tr>
<td>In drug Contacts</td>
<td>0.190</td>
<td>0.144</td>
<td>0.197</td>
<td>0.151</td>
</tr>
<tr>
<td>In ratio retail prices</td>
<td>0.101</td>
<td>0.100</td>
<td>0.109</td>
<td>0.117</td>
</tr>
<tr>
<td></td>
<td>(1.88)</td>
<td>(1.77)</td>
<td>(1.91)</td>
<td>(1.93)</td>
</tr>
<tr>
<td>ln ratio pharma prices</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
|                      |            |            |            |            | (1.99)*| (1.87)| (2.03)*| (2.04)*|**
| quarter dummies     | yes | yes | yes | yes | yes | yes | yes | yes |
| class dummies       | yes | no  | yes | no  | yes | no  | yes | no  |
| year dummies        | yes | yes | yes | yes | yes | yes | yes | yes |
| year & class        | no  | no  | yes | yes | no  | no  | yes | yes |
| Observations        | 1372| 1372| 1372| 1372| 1372| 1372| 1372| 1372|
| Number of groups    | 149 | 149 | 149 | 149 | 149 | 149 | 149 | 149 |
| R-squared           | 0.48 | 0.45 | 0.49 | 0.49 | 0.48 | 0.45 | 0.49 | 0.49 |

Absolute value of z statistics in parentheses
* significant at 5%; ** significant at 1%

### Table 11. The effect of DTCA on market share (dollar value)

<table>
<thead>
<tr>
<th></th>
<th>ln_ratio_mkshare_dollars</th>
<th>ln_ratio_mkshare_dollars</th>
<th>ln_ratio_mkshare_dollars</th>
<th>ln_ratio_mkshare_dollars</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>RE</td>
<td>FE</td>
<td>RE</td>
<td>FE</td>
</tr>
<tr>
<td>In drug DTCA</td>
<td>0.034</td>
<td>0.028</td>
<td>0.035</td>
<td>0.029</td>
</tr>
<tr>
<td></td>
<td>(2.75)**</td>
<td>(2.36)*</td>
<td>(2.90)**</td>
<td>(2.52)*</td>
</tr>
<tr>
<td>In drug Contacts</td>
<td>0.235</td>
<td>0.176</td>
<td>0.254</td>
<td>0.197</td>
</tr>
<tr>
<td>In ratio retail prices</td>
<td>0.272</td>
<td>0.146</td>
<td>0.238</td>
<td>0.090</td>
</tr>
<tr>
<td></td>
<td>(4.74)**</td>
<td>(2.45)*</td>
<td>(3.96)**</td>
<td>(1.42)</td>
</tr>
<tr>
<td>ln ratio pharma prices</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
|                      |            |            |            |            | (4.84)**| (2.72)**| (4.10)**| (1.78)|**
| quarter dummies     | yes | yes | yes | yes | yes | yes | yes | yes |
| class dummies       | yes | no  | yes | no  | yes | no  | yes | no  |
| year dummies        | yes | yes | yes | yes | yes | yes | yes | yes |
| year & class        | no  | no  | yes | yes | no  | no  | yes | yes |
| Observations        | 1373| 1373| 1373| 1373| 1373| 1373| 1373| 1373|
| Number of groups    | 149 | 149 | 149 | 149 | 149 | 149 | 149 | 149 |
| R-squared           | 0.74 | 0.66 | 0.74 | 0.67 | 0.74 | 0.66 | 0.74 | 0.67 |

Absolute value of z statistics in parentheses
* significant at 5%; ** significant at 1%
Table 12A. Regressions without the price ratio included
Dependent variable: Market share (dollars)

<table>
<thead>
<tr>
<th></th>
<th>mk_share_dollars</th>
<th>mk_share_dollars</th>
</tr>
</thead>
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<tr>
<td></td>
<td>RE</td>
<td>FE</td>
</tr>
<tr>
<td>ln drug DTCA</td>
<td>0.001</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td>(1.79)</td>
<td>(1.60)</td>
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<tr>
<td>ln drug Contacts</td>
<td>0.005</td>
<td>0.004</td>
</tr>
<tr>
<td></td>
<td>(5.49)**</td>
<td>(3.47)**</td>
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<td>yes</td>
</tr>
<tr>
<td>class dummies</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>year dummies</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>year&amp; class</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>Observations</td>
<td>1416</td>
<td>1416</td>
</tr>
<tr>
<td>Number of groups</td>
<td>155</td>
<td>155</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.15</td>
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</table>

Absolute value of z statistics in parentheses
* significant at 5%; ** significant at 1%

Table 12B. Regressions without the price ratio included
Dependent variable: Market share (units sold)

<table>
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</thead>
<tbody>
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<td>RE</td>
<td>FE</td>
</tr>
<tr>
<td>ln drug DTCA</td>
<td>0.001</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td>(2.29)*</td>
<td>(2.09)*</td>
</tr>
<tr>
<td>ln drug Contacts</td>
<td>0.003</td>
<td>0.002</td>
</tr>
<tr>
<td></td>
<td>(4.34)**</td>
<td>(2.20)*</td>
</tr>
<tr>
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<td>yes</td>
</tr>
<tr>
<td>class dummies</td>
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<td>no</td>
</tr>
<tr>
<td>year dummies</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>year&amp; class</td>
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<td>no</td>
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<tr>
<td>Observations</td>
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<td>Number of groups</td>
<td>155</td>
<td>155</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.12</td>
<td></td>
</tr>
</tbody>
</table>

Absolute value of z statistics in parentheses
* significant at 5%; ** significant at 1%
### Table 12C. Regressions without the price ratio included

Dependent variable: Log of ratio Market share (dollars)

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<tr>
<th></th>
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<tbody>
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<td></td>
<td>RE</td>
<td>FE</td>
</tr>
<tr>
<td>ln drug DTCA</td>
<td>0.022</td>
<td>0.017</td>
</tr>
<tr>
<td></td>
<td>(1.88)</td>
<td>(1.45)</td>
</tr>
<tr>
<td>ln drug Contacts</td>
<td>0.223</td>
<td>0.167</td>
</tr>
<tr>
<td></td>
<td>(10.71)**</td>
<td>(7.81)**</td>
</tr>
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<td>0.034</td>
</tr>
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<td>yes</td>
</tr>
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<td>year &amp; class</td>
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<td>no</td>
</tr>
<tr>
<td>Observations</td>
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<td>Number of groups</td>
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<td>155</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.66</td>
<td>0.59</td>
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</table>

Absolute value of z statistics in parentheses
* significant at 5%; ** significant at 1%

### Table 12D. Regressions without the price ratio included

Dependent variable: Log of ratio Market share (units sold)

<table>
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<th></th>
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<th>ln_ratio_mkshare_units</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>RE</td>
<td>FE</td>
</tr>
<tr>
<td>ln drug DTCA</td>
<td>0.012</td>
<td>0.009</td>
</tr>
<tr>
<td></td>
<td>(1.06)</td>
<td>(0.83)</td>
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<td>ln drug Contacts</td>
<td>0.186</td>
<td>0.136</td>
</tr>
<tr>
<td></td>
<td>(9.46)**</td>
<td>(6.62)**</td>
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<tr>
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<td>yes</td>
</tr>
<tr>
<td>class dummies</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>year dummies</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>year &amp; class</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>Observations</td>
<td>1410</td>
<td>1410</td>
</tr>
<tr>
<td>Number of groups</td>
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<td>155</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.48</td>
<td>0.44</td>
</tr>
</tbody>
</table>

Absolute value of z statistics in parentheses
* significant at 5%; ** significant at 1%
References


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Arthur King has been on the faculty of Lehigh University (Bethlehem, PA) since 1976. He established Lehigh in the Prague summer program in 1994 and continues to direct it annually. He serves as a Board member for the Visiting Nurse Association of St. Luke’s Health Care System (Bethlehem, PA) and on the Scientific Committee of the International Health Economics Association (iHEA).
Abstract
In this paper, we study the investment decisions of Multinational enterprises (MNEs). MNEs have several additional objectives and rules of operation. This is because MNEs have to satisfy all of the following entities and conditions in addition to fulfilling all of the goals of domestic companies. First, they have to obey any restrictions foreign governments impose upon them, including expropriation itself. Additionally, they have to watch global tax rates and attempt to mitigate their tax bills. Third, they have to disallow themselves from borrowing too much. Fourth, they have to have a certain remission rate from both the subsidiaries and the parent company. Further, they have to consider the exchange rates between the currencies where their subsidiaries operate and that of the parent country.

Keywords: Multinational enterprises (MNEs), investment decision, optimization
I. Introduction

The goals which domestic firms may pursue may not be the ones which multinational enterprises (MNEs) follow. The goals of profit and/or wealth maximization which a few theorists propose have come under attack over the years by several others. Those with contending views have offered goals which compete with those of profit and wealth maximization. In our study, we do not discard these goals but merely supplement them with a few other objectives for which some evidence is given that holds true at times. We basically propose that a firm does not have a single goal, but rather several interrelated ones working together. Thus, a firm may be trying to both maximize profit and share price to satisfy stockholders as well as minimize the cost of capital while also trying to increase sales and still behave altruistically.

Compared to domestic firms, MNEs have several additional objectives and rules of operation. This is because MNEs have to satisfy all of the following entities and conditions in addition to fulfilling all of the goals of domestic companies. First, they have to obey any restrictions foreign governments impose upon them, including expropriation itself. Additionally, they have to watch global tax rates and attempt to mitigate their tax bills. Third, they have to disallow themselves from borrowing too much. Fourth, they have to have a certain remission rate from both the subsidiaries and the parent company. Further, they have to consider the exchange rates between the currencies where their subsidiaries operate and that of the parent country.

This study examines the numerous objectives and constraints which an MNE could face and develops a model of international investment and financing in a global context.

II. Literature Survey

A. Overall Survey On Goals of a Firm

The theory of finance was developed in the last century over a period of four to five decades. The proponents of that theory, which we shall call traditional finance (TF), are theorists such as Fama and Miller (1972), Friedman, Markowitz (1952), Lintner, Sharpe (1970), and others. They developed a theory which has several presuppositions, namely that:

1. Humans are rational, have immense (almost perfect) knowledge, and can predict the future in an unbiased way.
2. Top managers and owners have the same wishes and motives.
3. The goal of a firm is a single one. A firm is basically a domestic one.
4. Goals are unconstrained.
5. Humans are motivated by their own welfare. They do not derive utility from others’ welfare.

TF developed a few objectives based on the aforementioned analysis.

These objectives are:

1. The company attempts to maximize profit over a pre-specified period of time.
2. Such aggregation leads to the maximization of the company’s share price.
3. The cost of capital is minimized while the above two items are attained.
4. The firm maximizes the summation of the net present value of all of its projects.

However, several proponents have objected that there is a substantial lack of perfect information in the real world (Simon, 1948). In addition, top executives have different views and motives from
business owners. As a result, there are two different objectives that have been put forth. The first, proposed by Simon (1948), says that top executives, in the face of imperfect information, attempt to satisfy owners with a certain profit for the firm. This is called “profit satisficing”. Of course, owners do not know that managers do not maximize profits, since neither they nor top executives know the exact amount of such profit maximization.

An alternative theory proposed by Baumol (1959) states that top executives primarily want to raise their own compensation. He argues that they attempt to maximize sales, since executives of larger companies tend to accrue bigger pay and benefits packages.

The motivation of pure self interest by humans has also been questioned by several economists (Vernon Smith, 1976). These theorists give evidence that human beings derive pleasure from other people deriving satisfaction from certain economic activities.

To formulate this attitude, we can state that if a has a higher income, then b enjoys a having such higher income and so derives a higher utility from it. If b is a top manager and he/she has hiring authority, then b will hire additional employees, since he/she will derive a higher welfare. We can offer the theory that as long as the marginal productivity of labour is positive, he/she will hire people and will stop when such productivity is zero.

Maximize Nt => N*

Furthermore, many economists put forth the fact that there are numerous constraints in pursuing business activity. These constraints should be explicitly stated in an investment and financing context. Finally, financiers propose that the true model should be a multi-objective and multi-constraint one.

B. Detailed Literature Survey on Goals of a Firm

In the following several pages, we want to explicitly state the several objectives and constraints which a firm may encounter as it pursues investment and financing in a multinational context.

1. Maximization of Net Present Value

Boucher (1987) builds a corporate planning model for capital investment and financing in the context of foreign direct investment. This model has a single objective of maximizing the sum of liquid assets (net project cash flows) remaining after T years.

Maximize

$$\sum_j \sum_p a_{jp} x_{jp} + V_T - W_T + \sum_j M_j$$  \hspace{1cm} (1)

where:

$\alpha_{jp}$ = the net present value of post-T cash flows from project p in country j.

$x_{jp}$ = a selection variable (0,1) for project p of the subsidiary in country j.

$V_T$ = the horizon lending position of the firm (parent and subsidiaries).

$W_T$ = the horizon borrowing position of the firm.

$M_j$ = the time T present worth of post-T cash flows from sources outside the project set in subsidiary j.
Boucher argues that maximizing the net present value of cash flows should be the goal for multinational corporations (MNCs). We use the firm’s weighted average cost of capital by discounting expected future cash flows to derive net present value. If a firm maximizes the sum of the net present value of cash flows of all individual investment projects, given its financing structure, the firm would maximize the net earnings after taxes over the long run. In the short run, of course, net earnings would not necessarily be maximized because of the accrual basis of accounting, where several benefits accrue to the firm over the long run.

In a survey in Financial Management (Stonehill, 1975) MNC managers have totally different viewpoints concerning the above objective. Most managers have more than one objective in a given decision situation. Therefore, additional objectives are necessary to supplement Boucher’s model. Since the structure of international business operations has increased in complication, we need multiple objective functions to satisfy the requirements of MNCs’ global strategies and business operations.

This survey indicates that different MNC managers have different priorities in mind. Some prefer maximizing stockholders’ equity, while some are concerned about financial risk. Others want to take advantage of the sources of financing, thus minimizing the average cost of capital. Thus, we develop a multi-objective linear model to supplement Boucher’s model.

B. Minimization of the Cost of Capital

Presently, companies are rigorously assessing the extent to which functions and processes enhance the value of the organization. Heightened economic uncertainty naturally translates into higher levels of financial market volatility. Hard economic times is another key contributor to global volatility. Consequently, more companies are examining their exposures to currencies, interest rates, equities, and commodities, to find out if they can manage the above more efficiently (Chodi, Rudi and Mieghem, 2010).

Boucher discusses that real interest rate differentials exist due to restrictions on borrowing, concessionary loans and subsidies. He mentions that the reduction of borrowing costs through the evaluation of specific borrowing sources was possible and concludes that other relevant considerations in computing real interest rates are devaluation and corporate income tax effects. We address these concerns in our constraints.

Financing risk can be considerably reduced for MNCs in comparison with domestic firms. Multinationals have access to both international and national debt and equity markets. Ceteris Paribus, this added ability reduces their cost of capital compared with domestic firms that are restricted to raising funds from only one capital market. In addition, when foreign exchange markets are in disequilibrium, multinational firms have the choice to finance in different currencies, some of which may offer temporarily lower required rates of return than would be justified by the law of interest rate parity (Cunha and Paisana, 2010).

Exchange rate instability is one of the most difficult and persistent problems with which the financial executives of MNCs must cope. Profits and cash flows can be impacted substantially negatively. On the other hand, unexpected changes in foreign exchange rates can create disequilibria, which can lead to opportunities for increased profit.
The aforementioned support Boucher’s assumption of capital market segmentation. A national capital market is segmented if the required rate of return on securities in that market differs from the required rate of return on securities of comparable expected return and risk that are traded on other national securities markets.

On the other hand, if all capital markets are fully integrated, securities of comparable expected return and risk should have the same required rate of return in each national market after adjusting for foreign exchange risk and political risk (Domowitz, Glen and Madhavan, 1997).

Market segmentation is a financial market imperfection caused by investor attitudes and government actions. First, investors are influenced by financial risk, foreign exchange risk, political risk, transaction costs and information barriers such as the quality of corporate disclosure and familiarity with securities markets and institutions. Second, government constraints include: quotas on trade, tax policies and controls on foreign exchange use, restrictions on the free transfer of capital and interference in the functioning of domestic securities markets.

A firm’s cost of capital is affected by the extent of market segmentation. On the one hand, if a firm is sourcing its capital in a fully segmented market, it is likely to have a higher cost of capital than if it had access to other capital markets. However, most multinational corporations have access to other capital markets, so a firm may be able to overcome this constraint and lower its cost of capital.

On the other hand, the cost of capital of a firm with access to fully integrated capital markets may be lower because that cost may reflect a lower international price of risk. If economic activities are less than perfectly correlated among countries, investors can improve their portfolio performance by diversifying internationally. Adding foreign securities to a domestic portfolio should reduce that portfolio’s systematic risk (Reeb, 2000). Therefore, the required rate of return on internationally traded securities should reflect their higher value to internationally diversified portfolios rather than just their value to investors in the country in which the firm is located.

The following analyzes how market imperfection and other foreign influences are theoretically likely to affect a firm’s cost of capital as well as project-specific discount rates. Although the main concepts used to analyze cost of capital in the domestic case provide the foundation for the multinational case, it is necessary to analyze the unique impact of foreign risks and foreign institutional variables (Shapiro, 1978).

A comparison of nominal rates is insufficient in a total analysis of costs. The reason is the cost elements differ across countries and sources. Some alternatives involve risk of exchange, whereas others do not. Also, tax deductibility varies among nations. Nominal interest rates can be meaningless due to the diversity in different countries of compensating balance requirements, commitment fees, commissions and securities flotation costs.

However, the focus on the financing decision is also very important. Whereas capital budgeting helps a firm allocate its funds in the most efficient way, thus maximizing operating earnings, the financing decision determines how operating earnings will be divided among creditors, stockholders, and the income tax collector.
Furthermore, capital budgeting itself requires the measurement of a firm’s weighted average cost of capital. Thus, the investment decision and the financing decision are inter-dependent (Wald, 1999).

A lot of work was done on deriving the appropriate required rate of return, or the cost of capital. If the cost of capital were minimized, the total value of the firm’s securities would be maximized, by definition. Thus, maximizing the value of a firm’s securities becomes the “proper” financial objective as a result of the need to minimize the cost of capital for capital budgeting purposes for the parent company.

The cost of capital is generally defined as the weighted average cost of capital (WACC). This WACC approach assumes that projects of leveraged firms are simultaneously financed with both debt and equity. Therefore, the cost of capital is a weighted average of the cost of debt and the cost of equity. Minimizing the MNC’s weighted average cost of capital becomes the following:

\[
\text{Minimize Cost of Capital} = \frac{K_r}{E/V} + \frac{K_s(1 - \tau_c)(b/V)}{E + b}
\]

where

- \(K_r\) = the risk-adjusted cost of equity.
- \(K_s\) = the before-tax cost of debt. If the monetary market segmentation theory is not considered, \(K_s\) is simply the borrowing rate or the interest rate. However, in a segmented monetary marketplace, the factors affecting the cost of debt would include exchange rate, currency devaluation, or revaluation effects.
- \(\tau_c\) = the marginal corporate tax rate.
- \(E\) = the market value of the firm’s equity.
- \(b\) = the market value of the firm’s debt.
- \(V\) = the total market value of the firm’s securities (\(E + b\)).

The cost of equity for a multinational corporation can be measured as the sum of the total dividend payouts from all subsidiaries on a market value per-share basis and the market price of a share of the parent company stock at time t. It can be expressed as (Kibet, 2010):

\[
K_e = \frac{D_t}{N} \times \frac{1}{P_{t-1}} - g
\]

where

- \(D_t\) = the expected sum of dividends from all subsidiaries.
- \(P_{t-1}\) = the market value per share at time t-1 (the beginning of the year).
- \(N\) = the total number of shares outstanding.
- \(g\) = the expected growth rate of dividends or market price of a share of the parent company’s stock.
1-\(f\) = the earnings retention rate.
\(P_{jt}\) = profit available from sources outside the project analysis in country \(j\) during period \(t\).
\(P_{jpt}\) = the profit from project \(P\) of subsidiary \(j\) in period \(t\).

Deregulation of major international money and capital markets has freed MNCs from the confines of domestic markets. Increasingly, companies are tapping investors worldwide to meet their funding requirements. In addition, financial executives today have a vast array of sophisticated and complex arrangements from which to choose, all designed to take advantage of investor preferences and arbitrage opportunities in different markets.

Assume the optimal source (country) to obtain the funding is \(i\). The normal procedure for measuring the cost of debt for a multinational firm requires a forecast of interest rates, the exchange rates for projects in different countries, the proportions of various classes of debt the firm expects to use, and the corporate income tax rate. The interest costs of the different debt components and exchange rates are then averaged according to their proportion in the debt structure. The before-tax average, \(K_i\), is then adjusted for corporate income taxes by multiplying it by the expression \((1 - \tau_c)\) to find the weighted average after-tax cost of debt. Therefore, \(K_i\) for a multinational corporation can be expressed as the following:

\[
K_i = b_{ji,t-1} (E_{ji,t-1} + r_{ji,t-1} \cdot b_{ji,t-1} \cdot E_{ji,t-1} \cdot E_{j,ias})
\]

where

- \(b_{ji,t-1}\) = the loan from country \(i\) to subsidiary \(j\) at time \(t-1\).
- \(r_{ji,t-1}\) = the interest rate at time \(t-1\).
- \(E_{ji}\) = the devaluation or revaluation ratio.
- \(E_{j,ias}\) = the devaluation or revaluation ratio.

Assuming some of the capital would be used to fund the subsidiary projects and the capital acquired from source \(i\) to subsidiary \(j\) is negotiated in country \(i\)’s currency, the ratio \(e_{ji}\) adjusts the local currency equivalent of the loan to the amount of local currency required for repayment at time \(t\) after any devaluations or revaluations. \(e_{ji,t-1}\) is the exchange rate from country \(i\)’s currency to country \(j\)’s currency at the beginning of time \(t\) and \(e_{ji,t}\) at the end of time \(t\). Since the analysis is in U.S. dollars, \(E_{ji} \cdot E_{j,ias}\) would convert the ratio to the U.S. dollar equivalent. The ratio

\[
E_{j,ias} = \frac{e_{ji,t-1}}{e_{ji,t}}
\]

adjusts the devaluation or revaluation in subsidiary \(j\)’s currency to the U.S. dollar.

\(e_{jas}\) is the exchange rate (local currency / U.S. Dollars) existing at time \(t\).

Developing a good system to evaluate currency fluctuation and performance is vital for the management of an MNC, but this challenge is difficult and ever-changing under any circumstances. The decrease in the rate of inflation in the U.S. has also lessened companies’ concern with the distortions caused by historic cost
accounting even though a portion of corporate profits comes from countries with high rates of inflation. When our analysis accounts for corporations being taxed on their net income while interest incurred is tax deductible, we find that the firm’s debt/equity mix does have an impact on its stock price. In particular, the judicious use of debt financing should increase share prices since it is no longer possible for individual investors to duplicate the results of corporate borrowing in the international money markets through their own actions.


The majority of finance theorists throughout the world today profess that a firm’s financial goal should be to maximize the wealth of its stockholders. Although not everyone agrees with that objective (Simon, 2007), the goal of most MNCs is to at least maximize the value of the home company’s stock. The market value of the common stock for a leveraged firm is estimated as the weighted dividend income plus the tax deduction from leveraged debts b times the corporate tax rate \( \tau_c \) as the following:

\[
V(t) = \frac{D_i (1 - \tau_c)}{R_i} + b \times \tau_c \times R_i
\]

where:

- \( V(t) \) = the aggregate market value of the common stock.
- \( \tau_c \) = the corporate income tax rate.
- \( D_i \) = the mean of the probability distribution of their respective total earnings (and, of course, their total dividends) each year.
- \( R_i \) = the after-tax discount rate used by the market to evaluate a level annual income stream of the sort generated by firms in this risk class – the Fortune 500 companies index. While some theorists argue that a different index should be used for multinational corporations since their financing risks are lower than those of domestic firms, others argue that most Fortune 500 companies are MNCs themselves. The index should have already reflected and addressed these concerns, and I personally agree with the latter argument.

\[
V'(t) = \frac{D_i (1 - \tau_c) + b \times \tau_c \times R_i}{N \times R_i \times N}
\]

Then, the market value on a per-share basis is:

\[
V'(t) = \frac{D_i (1 - \tau_c) + b \times \tau_c \times R_i}{N \times R_i \times N}
\]

Therefore, we can rewrite the above formula as:

\[
\text{Maximize } \frac{D_i (1 - \tau_c)}{R_i \times N} + \frac{b \times \tau_c}{N}
\]

where \( N \) denotes the number of shares outstanding for each firm.


If the firm now decides, as before, to borrow an amount \( W_{US} \) at an interest rate \( R_{US} \) from country i in order to retire the fraction \( b/V(t) \) of its stock as a strategy to take advantage of the international monetary markets, the annual income available to each of its remaining shares becomes:

\[
\text{Maximize } \sum \frac{[D_i - R_i \times (b + W_{US} \times E_{US})(1 - \tau_c)](1 - \tau)}{N[1-(b + W_{US} \times E_{US})/V(t)]}
\]

A Multi Objective and Multi Constraint Approach to the Investment and Financing of a Multinational Enterprise: A Synthesis
Thus, \( R_{i,ws} \cdot (b + W_{i,ws} \cdot E_{i,ws}) \) per year must be paid to creditors, leaving a total of \( D_i - R_{i,ws} \cdot (b + W_{i,ws} \cdot E_{i,ws}) \) for stockholders. The interest payments are tax-deductible for the corporation; however, it is taxable as an income to the stockholder under his/her tax rate, so that a net after-tax annual income of \( D_i - R_{i,ws} \cdot (b + W_{i,ws} \cdot E_{i,ws})(1 - \tau) \) is provided.

3. Maximization of a Firm’s Sales.
Max. Summation of \( Pr \cdot Q \)
\( Pr = \) price of the product or service.
\( Q = \) volume of the product or service

C. Review of the Literature on Constraints
Diverse financiers have proposed numerous constraints inter-temporally (Boucher, 1987). These constraints include costs associated with transfer pricing, managerial fees and royalties, inter-subsidiary loans, and foreign dividend remissions. However, since this paper has secondary objective functions with additional concerns, the minimum acceptable rate of return and the debt / equity ratio constraints are added to the original constraints functions.

In addition, Boucher assumes all subsidiaries are wholly owned; the tax laws varied somewhat from country to country and the appropriate set of governing restrictions depends on which projects were selected. This paper also discusses the joint venture scenario and establishes a Joint venture Fact \( J_s \) to redistribute dividend payouts by basically assuming that a joint venture partner has the contractual right to retain a portion of the operating profits. Therefore, the dividend payouts in a joint venture should be constructed differently from those of a wholly owned subsidiary. On the other hand, there are no differences regarding the minimum acceptable rate of return for projects, whether carried on either a wholly owned subsidiary or in a joint venture.

1. Minimum Acceptable Rate of Return:
Most theorists support the idea that a key rationale for the existence of multi-national firms is their ability to take advantage of national and international financial market imperfections through a process called internalization (Dunning, 1988). This comparative advantage should theoretically result in lower capital costs for an MNC compared to domestic firms. This international availability permits an MNC to maintain its desired debt ratio, even when significant new funds must be raised, and keep its marginal cost of capital constant for considerable ranges of its capital budget.

The cost in this connection refers to the rate of return which investments financed by either debt or equity must earn in order to justify acquiring the capital to undertake them. If they do not provide that return (i.e., if their present values are negative), then the firm’s shareholders will have been made worse off, with the main criterion for shareholder welfare again being stock price and expressed as follows:

\[
\Delta (V(t)) \geq 1
\]
\[
\Delta (I)
\]

The increase in the total market value of the firm, \( \Delta (V(t)) \), which results from undertaking a new investment must be at least as great as the dollar amount of the funds raised for that investment, \( \Delta (I) \). Since the market value of the common stock as previously defined is:
\[
V(t) = \frac{D_t (1 - \tau_c)}{R_t} + b \cdot \tau_c \quad (2')
\]

Applying (2') into (1'), then

\[
\frac{\Delta (V(t))}{\Delta (I)} = \frac{D_t (1 - \tau_c)}{R_t \cdot \Delta (I)} + \frac{b \cdot \tau_c}{\Delta (I)} \geq 1 \quad (C1)
\]

The factors over which the firm has control are its anticipated earnings, \(D_t\), its debt, \(b\), and the investment expenditure, \(\Delta (I)\). The remaining items are constant insofar as the investment is concerned. From this expression, we can determine the minimum acceptable rate of return on a project as a function of the method chosen to finance it.

2. The Debt / Equity Ratio:

The above formula can be expressed as the combination of the costs of equity and debt in proportion to the relative weight of each in the firm’s optimal long-term financial structure. Most MNCs have fixed debt/equity ratios strategically denoted as a constant \(K\).

\[
\frac{b}{V(t)} \leq K \quad (C2)
\]

If it is further desired per management policy to set an upper limit to the debt/equity ratio in the MNC’s financing structure, this can be introduced as a further constraint on the model’s range of solutions. Though the quantitative description of the MNCs’ structural characteristics may be thus changed, depending on whether the critical debt/equity ratio would be reached in a solution outcome of the model that is not bounded in this respect, the qualitative nature of the result would again remain unaltered.

However, while the substitution of borrowed funds for shareholders’ capital should produce a favorable effect on the price of a firm’s (remaining) shares, there is obviously a limit as to how far this argument can be carried. At its extreme, it would suggest that the corporation should keep issuing debt and retiring more stock until there is but one share left, which would then sell at a very high price. Apart from the legal constraints the firm would eventually confront in doing this – there are limits on how much repurchasing of stock is permissible – there is a more practical constraint which would take hold much earlier: creditors would eventually refuse to lend the firm any more money. The company would not be able to make promises of annual interest obligations with any degree of confidence and its supply of debt would be shut off.

The institutional investors which provide the bulk of MNCs’ debt financing have developed a set of formal and informal guidelines directing how much debt firms in industries can stand in relation to their equity capital. Not only do these guidelines place limits on the amount of borrowing that can be done, but average investors also begin to worry when a firm approaches its generally accepted debt limit and thus become less attracted to its shares because they perceive themselves as being subject to substantially increased risks of bankruptcy or reorganization in the event of default.

Theoretically, when a firm borrows up to its debt limit, the desired stock price will become less attainable and the current share price is likely to fall because of this additional borrowing. In reality, of course, there is no one figure that can be agreed upon by all concerned as the debt limit for a particular firm. Instead of a specific number, some range of possible debt levels would make more sense as an indication of the maximum permissible
amount of borrowing, however difficult these are to calculate.

Industry norms have been established and a corporation ignores them at its peril, even if it can find a willing lender, which is a concern also addressed by Boucher in a constraint function called the Capital Structure Restriction.

3. Subsidiary Cash Flow Restriction:
Boucher constructed the mathematical model for the Subsidiary Cash Flow Restriction based on two criteria: local lending and borrowing; and the intra-company loan. The final product is written as:

\[
M_{it} + \sum_{p} a_{ipt} \cdot x_{ip} - \sum_{j, j \neq i} v_{ij,t} + \sum_{j, j \neq i} v_{ij,t} - v_{it} + w_{it} + v_{i,t-1} \cdot E_{i,us} + l_{j,t-1} \cdot (1 - \tau_t) \cdot E_{i,us} - w_{i,t-1} \cdot E_{i,us} - r_{i,t-1} \cdot w_{i,t-1}(1 - \tau_t) \cdot E_{i,us} + \sum_{j, j \neq i} v_{ij,t-1} \cdot E_{i,us} + \sum_{j, j \neq i} l_{i,t-1} \cdot v_{ij,t-1}(1 - \tau_t) = 0
\]

where:

\( t = 1, 2, 3, \ldots, T \)

\( j \) = country of \( j, j_2, \ldots, U.S. \)

\( M_{it} \) = the cash flow available from sources outside this project analysis in country \( i \) during period \( t \).

\( a_{ipt} \) = the cash inflow (+) or outflow (-) made available by project \( P \) of the subsidiary \( j \) in country \( i \) during period \( t \). Values are expressed in U.S. dollars after taxes and include allowances for devaluation.

\( x_{ip} \) = a selection variable (0,1) for project \( P \) of the subsidiary in country \( j \).

\( w_{it} \) = the amount borrowed (lent) locally by subsidiary \( i \) in period \( t \), expressed in U.S. dollars.

\( d_{it} \) = the dividend remittance from subsidiary \( i \) to the U.S. parent in year \( t \).

\( g_{it} \) = the dividend remittance withholding tax of the country in which subsidiary \( i \) is domiciled.

\( K_{us,i,t} \) = the increase in equity capital directly invested from the U.S. parent.

\( E_{i,us} \) = the devaluation or inflation ratio and \( E_{i,us} = e_{t-1} / e_t \).

\( e_t \) = the exchange rate (local currency / U.S. Dollar) existing at time \( t \).

\( r_{i,t-1} \) = the interest rate in the lending country \( i \).

\( l_{j,t-1} \) = the interest rate in the lending subsidiaries \( j \).
1. U.S. Parent Cash Flow Restriction:
The cash flow restriction of the U.S. parent is similar to that of a subsidiary, with two additional variables: the dividend paid to corporate stockholders; and the additional taxation deemed payable to the U.S. government on dividends and interest payments derived from foreign subsidiaries.

\[
M_{us,t} + \sum_{p} \alpha_{us,p,t} \ast x_{us,p} - \sum_{j, j \neq us} v_{us,j,t} + w_{us,t} + v_{us,t-1} + \sum_{j, j \neq us} l_{us,t-1} (1 - \tau_{us}) - \\
(1 - \tau_{us}) + \sum_{j, j \neq us} r_{us,t-1} \ast l_{us,t-1} \ast v_{us,j,t-1} \ast (1 - h_j) + \sum_{j, j \neq us} v_{us,j,t-1} + \sum_{j, j \neq us} d_{j,us} - \\
\sum_{j, j \neq us} K_{us,j,t} - X_t - D_t + T_t \geq 0
\]

where:

- \( h_j \) = a withholding tax on interest paid from a subsidiary in country \( j \).
- \( X_t \) = U.S. taxes deemed payable in conjunction with foreign source income in year \( t \).
- \( D_t \) = the U.S. corporation dividend paid to stockholders in year \( t \).
- \( T_t \) = repayment in year \( t \) of taxes paid in prior years on foreign source income.

5. Foreign Source Income Blending Equations:
Boucher said that when reallocating funds by withdrawing dividends from a subsidiary’s retained earnings, the U.S. parent must consider the possibility of paying additional withholding taxes because many countries impose a withholding tax on dividends paid to foreign nationals. For example, assume the parent considers expanding a subsidiary’s marketing department and that the host country’s government imposes a very low tax rate on earnings generated by the subsidiary: if the earnings from the project will someday be remitted to the parent, the MNC would be wise to consider how the parent’s government taxes these earnings. If there is a high tax rate on the remitted funds, then the project may be feasible from the subsidiary’s point of view but not the parent’s.

Under such a scenario, the parent company should not consider financing such a project. In addition, the U.S. parent can compute taxes using the “overall basis,” whereby all foreign source income is assessed together and an overall tax rate is computed. This is done by remitting dividends from low and high tax countries simultaneously so as to create an offset. This ability to “blend” foreign source income is an important component of the overall strategy of financing units of the corporate system.

Foreign source income used in the computation of U.S. taxes also includes interest, royalties, and technical assistance fees. Withholding taxes paid by the foreign subsidiary along with these payments are credited in the same manner as foreign income taxes and thus become an offset to the U.S. taxes deemed payable on foreign source income.

Previous modelling in this area has not explicitly dealt with the effects of these provisions on the firm’s financing strategy in a multi-period setting. The approach taken in the present formulation is to solve for the marginal cost of these sources of funds by explicitly modelling the penalties associated with each combination of remittances. This is called the foreign source income blending equation set and, for any given year, its components are written as follows:
6. Dividend Remittance Constraint:
Under the laws of various countries, the absolute size of the dividend that can be remitted to a foreign parent is often limited. The specific form of the limitation can be written from the dividend remittance laws of the various subsidiary companies.

Joint Ventures:
In joint ventures, the presence of local stockholders poses a major constraint on an MNC’s ability to adjust its dividend policy in accordance with global factors, such as in hesitating to increase dividends for fear of the difficulty in reducing them later, should earnings decline. However, local equity participation tended to result in a more stable dividend record because these shareholders expected to receive a designated return on their investment regardless of earnings. Other conflicts include local investors demanding a shorter payback period and the MNC insisting on a higher earnings retention rate.

Joint ventures with the host country in private or public companies have been one answer to national demands for an ownership share in their own industries. Nevertheless, more than 90% of U.S. foreign investments (by value) are without joint venture partners, despite the technical, monetary, and public relations advantages that such alliances can bring. Conflict over dividend policy is particularly likely, since there is no assurance that they will have the same need for funds or the same outlook on growth prospects in the case of reinvestment. Transfer pricing on products or components bought from or sold to related companies presents another knotty problem.

This paper addresses conflicts of interests in dividend payouts by assigning the joint venture ratio $J$, which represents an interest on funds, namely, retention of dividends. Dividend remittance can thus be expressed as the following involving joint ventures.

\[
\begin{align*}
-d_{j,us,t} & + \sum_{j} \frac{h_{c} * l_{us,t-1} * v_{us,j,t-1}}{(1 - h_{c})} C_{it} + X_{i} = 0 \\
\text{where:} \\
C_{it} & = \text{the foreign tax credit associated with the withdrawal of foreign income in year } t \text{ available for use in year } t' (t' = t-2, t-1, t+1, t+2, t+3, t+4, t+5). \\
X_{i} & = \text{the U.S. tax on foreign source income deemed payable in conjunction with the withdrawal of foreign source income in year } t \text{ prior to offsetting with foreign tax credits earned in other years}. \\
h_{c} & = \text{a withholding tax rate on royalties and fees}. \\
g_{j} & = \text{the dividend remittance withholding tax of the subsidiary } j. \\
\tau_{j} & = \text{the income tax rate in subsidiary } j. \\
d_{j,us,t} & = \text{the dividend remittance from subsidiary } i \text{ to the U.S. parent in year } t. \\
\tau_{us} & = \text{the U.S. income tax rate}. \\
l_{us,t-1} & = \text{the interest rate charged by the U.S. parent company}. \\
v_{us,j,t-1} & = \text{the amount lent from the U.S. to subsidiary } j.
\end{align*}
\]
\[ \sum_{j} J_{jt} (d'_{jt} - d_{jt}) \geq 0 \]  \hspace{1cm} (C6)

where:
- \( d'_{jt} \) = the upper limit in country \( j \) and year \( t \).
- \( J_{jt} \) = the joint venture ratio of country \( j \) and year \( t \) (e.g., wholly owned subsidiary \( J = 1 \)).

7. Capital Structure Restrictions:
Following Shapiro, an optimal capital structure is assumed wherein the average cost of capital curve is relatively flat over a range of leverage options. We further agree with Shapiro that this capital structure should be a company-wide target and that lending and borrowing within subsidiaries should be unconstrained in order to minimize overall financing costs. The capital structure restriction for any year \( t \) is maintained as follows:

\[ (W / E') K_t \leq W_t \leq (W / E) K_t \]  \hspace{1cm} (C7)

where \((W / E')\) and \((W / E)\) are the lower and upper limits on the overall debt to equity ratio. \( K_t \), the year \( t \) equity position, can be approximated by:

\[ K_t = K_0 + \sum_{j} \sum_{t} P_{jt} + \sum_{j} \sum_{p} P_{jpt} \times X_{jp} + \sum_{j} (T_t - D_t - X_t) + \sum_{j} \sum_{t} (v_{j,t-1}) \times (E_{j,us-1} + l_{j,t-1} \times v_{j,t-1}(1 - \tau_j) \times E_{j,us}) - \sum_{j} \sum_{t} w_{j,t-1}(E_{j,us} - 1) - r_{j,t-1}(1 - \tau_j) \times E_{j,us} \]

where:
- \( P_{jt} \) = profit available from sources outside the project analysis in country \( j \) during period \( t \).
- \( P_{jpt} \) = the profit of project \( P \) of subsidiary \( j \) in period \( t \).
- \( K_0 \) = the beginning equity position.

8. Parent Company Dividend Payout:
This is the most important means of transferring funds from foreign affiliates back to the parent. Among the various factors that MNCs consider when deciding on dividend payments by their affiliates are taxes, financial statement effects, exchange risk, currency controls, financing requirements, availability and cost of funds, and the parent’s dividend payout ratio, all of which are built into the previous constraint functions. Therefore, the parent company dividend payout is simply the ratio of the profit available from sources outside the project in subsidiary \( j \) and the profit from project \( P \) of subsidiary \( j \) in period \( t \).

\[ D_t = f \left( \sum_{j} P_{jt} + \sum_{j} P_{jpt} \right) \]  \hspace{1cm} (C8)

where \( f \) is the payout ratio and \((1-f)\) is the earnings retention rate.
9. Profit Constraint

In socialistic countries, excessive profits are unwelcome and attract the ire of the governing authorities. Thus, a foreign subsidiary will have to limit its profitability over time.

\[ D_i - R_i U_s * (b + W_i U_s E_i U_s) (1 - C) * (1 - t) \]

10. Monopoly Profits

A firm has to be careful about having an extremely big market share, or else it could face antitrust suits and possible break up of the company. Thus, its sales have to be a certain amount less than one hundred percent, with that amount either defined or undefined.

\[ \text{[Pr]}Q = \text{MS}^* \]

Where
Pr = price of the product or service
Q = quantity of the product or service.
MS* = a certain market share less than one hundred per cent.

III. Issues to Address

In our design of the model, we need to ask the following crucial questions:

1. Are the presuppositions of the traditional finance appropriate? Specifically, are they totally, somewhat, or not at all unrealistic?
   a. The assumption of perfect or close to perfect knowledge needs to alter.
   b. The equality in the perceptions of owners and managers has to be questioned.
   c. The axiom of no existence of altruism does not hold.
   d. Is the domestic firm similar to the international firm?

2. Given a certain realism of the assumptions, is there a single goal or are there multiple goals? If a few objectives are used, which ones are the most likely? Is there a difference in the intensity of each of the objectives? Can we quantify the diverse objectives?

3. Should we use constraints? Is that more realistic than unconstrained optimization? If we should use constraints, is there a difference in the values of each of the constraints? Is there an exact specification of the values, or is there only a ranking of constraints from more important to less important ones?

IV. Model:

All of the optimizing models built by Boucher, Shapiro, Krainer, Ness, and the others have involved optimizing a single function of the decision variables. However, since multi-criterion programming is still a new theory and is difficult to solve, its applicability at present is limited to a somewhat restricted set of decision scenarios. In our analysis, since all the objective functions are in dollars, they are in commensurable quantities which are somewhat easier to solve.

There are many different methods and techniques used in solving multi-objective functions. Most of the techniques are computer programs that are commercially available. However, there is one simple method that could explain the theory behind these commercial programs. Since our objective functions have weighted importance, the Linear Combinations Approach is not only applicable in this aspect but also resets the multi-objective functions into a weighted single linear objective function.
In general mathematical terminology, the linear combinations model is

\[
\text{Max or Min } X_0 = \sum_{k=1}^{K} V_k \cdot C_k \cdot X
\]

Since the \( K \) linear objective functions \( C_k \cdot X, k=1, \ldots, K \) are commensurable, the single objective function has the same dimensional units as the \( K \) functions that it represents.

The \( V_k \) weights represent a set of relative priorities, assigned by the importance, for the various objective functions.

Finally, we can rewrite the above \( K \) linear objective functions as:

\[
\text{Max or Min } X_0 = f \{ C_1 X, C_2 X, \ldots, C_k X, \ldots, C_K X \}
\]

where \( f \{ \ldots \} \) is the notation for “is a function of.” The function \( f \) expresses some relationship among the \( K \) linear objective functions. For example, if \( K=1 \) and \( f \) is the identity function, we would have the single objective linear programming model equations; if we are concerned about the priorities among the \( K \) linear objective functions, \( f \) would represent a matrix of the prioritized functions.

The above approach, called Preemptive Goal Programming (PGP), was first introduced by Charnes and Cooper in 1962, and many mathematicians have modified it since. The goal of PGP is to represent the prioritized managerial goals as a set of constraints and associated deviational variables, which are similar to slack and surplus variables in ordinary linear programming models; our idea is to treat functions of these deviational variables as objectives that we wish to minimize or maximize. One approach to incorporating the multi-objective linear (or nonlinear) functions into a Multi-objective Linear Programming (MOLP) model is to have the decision maker make preemptive decisions as to the objectives’ importance or identify the objective that in his or her judgment has primary importance in the particular decision situation at hand. Once the manager identifies this overriding objective, he/she identifies the next most important goal, and so on, until we obtain a preemptive prioritization of all \( K \) goals or objectives.

Suppose an MNC manager would like to optimally determine his or her goals as closely as possible within a priority structure. If the MOLP assumptions are also met, the problem can be modelled and analyzed using preemptive programming. These underlying assumptions are: (1) we can state the multiple objectives in commensurable quantities; and (2) we can state two or more of the objectives only in incommensurable quantities.

Since all the objectives are in commensurable quantities, the objective functions are preemptively prioritized as the following, according to the MNC manager’s requirements.

**Objective Functions:**

1. Maximize the firm’s net project cash flow:

\[
\text{Maximize } \sum_j \left( \sum_p a_{jp} x_{jp} + V_r - W_r + \sum_j M_j \right) \tag{1}
\]

2. Minimize the cost of capital:

\[
\text{Minimize } X_0^* = K_e \left( \frac{E}{V} \right) + K_b \left( 1 - \tau_e \right) \left( \frac{b}{V} \right) \tag{2}
\]
3. Maximize the firm’s common stock value:

\[ \text{Maximize } X_0^3 = \frac{D_t \times (1 - \tau_c) + b \times \tau_c}{R_t \times N} + \frac{b \times \tau_c}{N} \quad (3) \]

4. Maximize the stockholders’ profits:

\[ \text{Maximize } X_0^4 = \sum_{\tau} \frac{[D_t - R_{i,u} \times (b + W_{i,u} \times E_{i,u}) (1 - \tau_c)] (1 - \tau)}{N [1 - (b + W_{i,u} \times E_{i,u}) / V(t)]} \geq 1 \quad (4) \]

5. Maximize the sales of the parent firm:

\[ X = S \times Pr \times Q \]

Constraints Functions:

1. Minimum Acceptable Rate of Return:

\[ \Delta (V(t)) = \frac{D_t \times (1 - \tau_c)}{R_t \times \Delta (I)} + \frac{b \times \tau_c}{\Delta (I)} \geq 1 \quad (C1) \]

2. The Debt / Equity Ratio:

\[ \frac{b}{V(t)} \leq K \quad (C2) \]

3. Subsidiary Cash Flow Restriction:

\[ M_{it} + \sum_{p} a_{ipt} \times x_{ip} - \sum_{j, j \neq i} \sum_{j, j \neq i} v_{ij,t} - v_{it} + w_{it} + v_{i,t-1} \times E_{i,u} + l_{i,t-1} \times v_{i,t-1} (1 - \tau_i) \]
\[ E_{i,u} - w_{i,t-1} \times E_{i,u} - r_{i,t-1} \times w_{i,t-1} (1 - \tau) \times E_{i,u} + \sum_{j, j \neq i} v_{ij,t-1} \times E_{i,u} + \sum_{j, j \neq i} l_{i,t-1} \times v_{ij,t-1} (1 - \tau_i) \]
\[ E_{i,u} - \sum_{j, j \neq i} v_{j,t-1} \times E_{i,u} - \sum_{j, j \neq i} v_{j,t-1} (E_{ji} - 1) \times E_{i,u} (1 - t_i) - \sum_{j, j \neq i} r_{j,t-1} \times v_{j,t-1} \times E_{ji} \times E_{i,u} \]
\[ (1 - \tau_i) - d_{it} (1 + g_i) + K_{us, i, t} \geq 0 \quad (C3) \]
4. U.S. Parent Cash Flow Restriction:

\[ M_{us,t} + \sum_{p} a_{us,p,t} \cdot x_{us,p} - \sum_{j,j \neq us} v_{us,j,t} - v_{us,t} + w_{us,t} + v_{us,t-1} \cdot l_{us,t-1} \cdot (1 - \tau_{us}) - w_{us,t-1} - \]

\[ w_{us,t-1} \cdot r_{us,t-1} \cdot (1 - \tau_{us}) + \sum_{j,j \neq us} l_{us,t-1} \cdot v_{us,j,t-1} \cdot (1 - h_{j}) + \sum_{j,j \neq us} v_{us,j,t-1} + \sum_{j,j \neq us} d_{j,us,t} - \]

\[ \sum_{j,j \neq us} K_{us,j,t} - X_{t} - D_{t} + T_{t} \geq 0 \] \ (C4)

5. Foreign Source Income Blending Equations:

\[ -\tau_{us} \left( \sum_{j,j \neq us} \frac{d_{j,us,t}}{(1 - \tau_{j})} \cdot \sum_{j,j \neq us} \frac{l_{us,t-1} \cdot v_{us,j,t-1}}{(1 - h_{j})} + \sum_{j,j \neq us} \frac{\tau_{j} \cdot d_{j,us,t}}{(1 - \tau_{j})} \right) + g_{j} \cdot \]

\[ d_{j,us,t} + \sum_{j} \frac{h_{j} \cdot l_{us,t-1} \cdot v_{us,j,t-1}}{(1 - h_{j})} \cdot C_{q,t} + X_{t} = 0 \] \ (C5)

6. Dividend Remittance Constraint:

\[ \sum_{j} (d_{j,t} - d_{j,us}) \geq 0 \] \ (C6)

7. Capital Structure Restrictions:

\[ (W / E') \cdot K_{t} \leq W_{t} \leq (W' / E) \cdot K_{t} \] \ (C7)

8. Parent Company Dividend Payout:

\[ D_{t} = f \left( \sum_{j} P_{j,t} + \sum_{j} \sum_{j} P_{j,us} \right) \] \ (kooros, 1997) \ (C8)

V. Implications of Results.

The attractiveness of the present research is that it is a comprehensive model of a typical company which is considering investing and financing internationally. The attractiveness stems from the following:

1. We include multiple goals.
2. We incorporate several constraints.
3. We use behavioural finance in the objectives of the top executives.
4. We question the traditional assumptions of the firm and include additional assumptions.

VI. Summary And Implications for Future Research

This research examines diverse objectives and constraints for a firm pursuing inter-national investment and financing. Our conclusion is that there are numerous constraints and goals which a potential firm may have, which we categorically state herein. Thus, we state mathematically and exactly the goals of profit maximization and satisficing, wealth, net present value and sales maximization, cost minimization and highest altruism. Additionally, we add constraints of cash...
flows among subsidiaries as well as from the subsidiary to the parent and limitations on dividends and certain profit targets, as well as limits on debt to equity levels, monopoly power, and productivity targets.

The next research we want to do is to actually run this model by choosing a certain ranking so that we can compute exact values for our objectives and constraints.

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respectively.
Customer Loyalty Attributes: A Perspective

Alok Kumar Rai
Medha Srivastava

Abstract
Many academicians have accepted the significance of loyalty in service industries (Bloemer et al., 1999; Caruana, 2002; Asuncion et al., 2004) and its potential impact on the development of sustainable competitive edge (Keaveney, 1995; Gremler and Brown, 1996) for the service firms. This may be attributed to the unique nature of services, increased dependency on technology and greater customer involvement in service delivery. A base of loyal customers can do wonder in terms of economic rewards and new business prospects as winning a new customer can cost as much as 6 times more than the cost of retaining an old one (Rosenberg and Czepiel, 1984) whereas profits can be increased from 25% to 125% if the potential migration is decreased by 5% depending upon the particular industry (Reichheld and Sasser, 1990). Customer loyalty clearly brings in significant benefits to the business and calls for a deeper investigation into the factors that act as its originator and contribute in its enhancement since, as mentioned by Johnson, Herrmann, and Huber (2006), the antecedents of customer loyalty are convoluted and dynamic, changing and evolving over time.

The purpose of this paper is to discuss customer loyalty and its significance in the modern business arena through a comprehensive survey of literature. Further, it seeks to explore various factors that serve as antecedents to customer loyalty development. In other words, investigating the customers’ checklist that they refer before deciding to sustain and develop their relationship with the company and its offerings is the key issue that this paper aims to address. The study intends to provide a framework for development of a scale for assessing customer loyalty and identifying what a particular class of loyalty would result into in terms of its contribution to the organization. The above identified framework would prove to be of great significance for service organizations in appraising different loyalty programs and also in segmenting customers depending upon organizational requirements.

Keywords: Customer Loyalty, Service Quality, Customer Satisfaction, Attitudinal Loyalty, Behavioural Loyalty
Introduction:
Globalized markets and borderless flow of information have resulted in intense competitive pressures and increased customer expectations. Productivity, quality, customer satisfaction are the buzz-words in today’s business scenario that demand considerable efforts on the part of the company. Further, to attain the basic business goals of survival and growth, businesses are looking for ways to attract and retain customers in the long run. It is established now that every business needs to understand and meet customers’ expectations in order to strive and thrive in the market. Customers have become the focal point of almost all the businesses now and thus, deserve all the attention and importance. However, due to heightened expectations, escalated competition and rapid ingress of new business concepts and formats, companies are finding it increasingly difficult to retain their customers along with managing to be profitable. Instability of the economic environment in recent times has also contributed to the loyalty issues in businesses.

In order to develop and sustain loyalty among the customers, it is important to find out what drives loyalty in a particular market. The factors which lead to loyalty need to be uncovered and understood before designing and implementing the strategies for customer retention and loyalty. Literature proposes relationships between customer loyalty and various other business constructs such as quality, satisfaction, trust and so on. These relationships need to be investigated and understanding the effect of these constructs on loyalty will surely provide an insight into customer loyalty formation.

Review Of Literature:
Services have been widely researched and analyzed for their unique characteristics and intensive customer orientation. Some of the major concepts that have been studied to explore the true nature of services are Service Quality (Parasuraman, Zeithaml & Berry, 1985; Gronroos, 1988; Cronin & Taylor, 1992; O Neill, 1992; Oliver, 1997), Satisfaction (Oliver, 1993 & 1997; Wirtz & Bateson, 1999; Zeithaml & Bitner, 2000), Loyalty (Dick & Basu, 1994; Oliver, 1997; Bowen & Shoemaker, 1998; Reichheld & Sasser, 1990; Heskett, Sasser & Schlesinger, 1994; McMullan & Gilmore, 2003; McMullan, 2005) and Complaint Management Systems (Boshoff, 1997 & 1999; Mattila, 2001; Boshoff & Staude, 2003; Craighead, Karwan, & Miller, 2004; Mattila & Patterson, 2004). Role of customer loyalty gains more prominence when applied in the context of services due to the higher human involvement in comparison to goods. Such people intrinsic character of services along with its intangible and perishable nature, enhance the scope for error at the time of service delivery and amplify the role and significance of human relationships in business transactions. Also, heightened competition has resulted in fewer possibilities for differentiation. To tackle the competitive pressures and gain an edge in the market, companies are now looking forward to leverage upon the intangible nature of services and the significant human interface involved there. Customer loyalty has been included in the strategic objectives of many companies due to the competitive strength it offers.

Dwyer et al. (1987); Morgan and Hunt (1994) noted that the interest in customer relationships mounted first in business to business relationships and later extended to business to customer relationships as stated by Sheth and Pravatiyar (1995) and
Sirdeshmukh et al. (2002). Ball et al. (2003) opined that customer loyalty needs to be incorporated as an essential construct in the theory and practice of relationships in marketing and its antecedents should also be included for a better understanding.

Bharatwaj et al. (1993) mentioned that the organizations should start taking customer loyalty as a source of competitive advantage. Reichheld and Sasser (1990), Sheth and Parvatiyar (1995) opined that customer relationship management has got the concepts of customer loyalty and business performance fore-grounded in its framework. As put by Oliver (1999), Reichheld (2001), customer loyalty has been drawing attention from both the business and academic worlds. Majumdar (2005) stated that “Customer loyalty is a complex, multidimensional concept”.

Thus, it becomes imperative to explore the conceptual domain of customer loyalty as offered by the literature for a precise idea of its concept, classification and antecedents in order to develop a sound pedestal for further research.

**Customer Loyalty - A Conceptual Framework:**

Day (1969) opined that in its most initial stage of conception, customer loyalty was perceived as the combination of repeat purchases from one service provider or brand coupled with the customers' psychological attachment toward the provider. Newman and Werbel (1973) defined it as a characteristic of those who repurchased a brand, considering only that brand, without seeking any information related to it. However, Oliver (1997) suggested that lack of information should not be seen as a factor leading to loyalty as true loyalty exists when the customer, despite being aware of the competitor’s offer, “fervently desires to rebuy a product or service; will have no other, against all odds and at all costs”.

Oliver (1999) defined loyalty as “a deeply held commitment to re-buy or re-patronize a preferred product/service consistently in the future, thereby causing repetitive same-brand or same brand-set purchasing…”

Jaishankar, Arnold and Kristy (2000) described loyalty as a product of repeat purchase, self-stated retention, price insensitivity, resistance to counter persuasion, and recommendation to others. Dwyer, Schurr, and Oh (1987); Fornell (1992) found that willingness to spread positive word-of-mouth about a service provider and repeat purchasing behaviour are the most common indicators of customer loyalty. A number of studies have treated these two behaviours as loyalty indicators (Zeithaml et al. 1996; Sirdeshmukh et al. 2002). However, loyalty manifests itself in not only behavioural fashion but it also gets influenced by the attitudinal setup of mind.

Dick and Basu (1994) brought out the idea of relative attitudes while defining various forms of loyalty depicted below. They described loyalty as the strength of the relationship between a customer’s relative attitude and repeat patronage and four dimensions had been identified: true loyalty, latent loyalty, spurious loyalty and no loyalty.
Dick & Basu (1994) defined relative attitudes as the evaluation of the service characteristics comprising the strength of that evaluation and the attitudinal differentiation which refers to the level of differentiation from substitutes.

Oliver, (1999); Knox and Walker (2001); Tsaur et al., (2002) made efforts to dig out greater knowledge and understanding in relation to the process of developing customer loyalty. Palmer et al. (2000); Knox and Walker (2001); Rowley (2005) proposed that the development of customer loyalty involves different stages and the customers who are at different stages require differentiated strategies.

Customer loyalty development had been categorized into four sequential phases by Oliver (1999):

- **Cognitive loyalty**: The customer believes the product to be superior than others and thus, chooses it over others. Information about the brand and its perceived benefits affect the buying decision.

- **Affective loyalty**: Reiterated confirmations of customers’ expectations lead to affective form of loyalty where a particularly favourable attitude gets developed towards the brand.

- **Conative loyalty**: High involvement and motives fueled by strong buying intentions give way to the development of an intense form of loyalty i.e., conative loyalty.

- **Action loyalty**: Strong motivations that ultimately lead to actions directed by the ‘need to remove’ every possible problem that might hinder the loyalty driven decision of purchasing a specific brand.
Oliver (1999) also suggested that action loyalty is perceived as a necessary result of engaging previous phases of loyalty and is accompanied by an additional desire to overcome obstacles that may prevent a customer from patronizing the service organization.

McMullan (2005) presented studies concerned with the classification of customer loyalty as follows:

<table>
<thead>
<tr>
<th>Author(s), year</th>
<th>Contribution</th>
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<tbody>
<tr>
<td>Jacoby and Chesnut (1978)</td>
<td>3-fold classification characterising approaches to measuring brand loyalty:</td>
</tr>
<tr>
<td></td>
<td>- behaviour</td>
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<td></td>
<td>- psychological commitment</td>
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<td></td>
<td>- composite indices</td>
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<tr>
<td>Dick and Basu (1994)</td>
<td>Study concentrated on the relative attitude and potential moderators of the relative attitude to repeat-patronage based on social norms and situational factors.</td>
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<tr>
<td></td>
<td>Relative attitude is the degree to which the consumer’s evaluation of one alternative brand dominates over another.</td>
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<tr>
<td></td>
<td>True loyalty only exists when repeat patronage coexists with high relative attitude.</td>
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<tr>
<td></td>
<td>Classification including spurious, latent and sustainable categories of loyalty.</td>
</tr>
<tr>
<td>Christopher et al. (1993)</td>
<td>The Loyalty Ladder</td>
</tr>
<tr>
<td></td>
<td>Examined the progress up or along the rungs from prospects, customers, clients, supporters and advocates</td>
</tr>
<tr>
<td></td>
<td>Progression requires increased discussion between exchange parties, commitment and trust, which develops within a consumer’s attitude based on their experiences including dialogue.</td>
</tr>
<tr>
<td>Baldinger and Ruben (1996)</td>
<td>A composite approach</td>
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<tr>
<td></td>
<td>Investigated the predictive ability of behavioural and attitudinal data towards customer loyalty across five sectors.</td>
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<tr>
<td>Author(s), year</td>
<td>Contribution</td>
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<tr>
<td>Raju (1980)</td>
<td>Developed scale to measure loyalty within the Exploratory Tendencies in Consumer Behaviour Scales (ETCBS).</td>
</tr>
<tr>
<td>Beatty et al. (1988)</td>
<td>Developed scale to measure commitment, based on the assumption that commitment is similar to loyalty. This scale included items, which reflected ego involvement, purchase involvement and brand commitment.</td>
</tr>
<tr>
<td>Gremler and Brown (1999)</td>
<td>Extended the concept of customer loyalty to intangible goods with their definition of service loyalty. They recommended a 12-item measure; with a seven-point scale described at either end strongly agree to strongly disagree.</td>
</tr>
<tr>
<td>Oliver (1999)</td>
<td>Greater emphasis on the notion of situational influences. Developed four-phase model of customer loyalty development building on previous studies but uniquely adding the fourth action phase.</td>
</tr>
<tr>
<td>Jones et al. (2000)</td>
<td>Explored a further aspect of customer loyalty identified as “cognitive loyalty”, which is seen as a higher order dimension involving the consumer’s conscious decision-making process in the evaluation of alternative brands before a purchase is affected. One aspect of cognitive loyalty is switching/repurchase intentions, which moved the discussions beyond satisfaction, towards behavioural analysis for segmentation and prediction purposes.</td>
</tr>
</tbody>
</table>
### Determinants Of Customer Loyalty:

Dick and Basu (1994); Oliver (1999) pointed out that over the years, researchers have recognized and studied many antecedents of customer loyalty to stores, companies, and brands. Terblanche and Boshoff (2006) said that it is imperative to understand the precursor drivers of loyalty in order to leverage the greatest benefits available from it. Johnson, Herrmann and Huber (2006) as well as many other practitioners and academicians in the field of customer loyalty ascertained that the factors leading to loyalty are complex and dynamic, changing and evolving over time. Taylor, Hunter and Longfellow (2006) noted a number of important gaps in the understanding of loyalty and other relationship marketing constructs.

Ball et al. (2004) mentioned that measuring customer loyalty and its determinants into different markets and countries may bring out significant variance in the explanation of loyalty. Brady et al. (2005) argued that despite various studies focusing on drivers of loyalty, scholars as well as practitioners are still lacking in the understanding of loyalty determinants and their relative importance.

The following section elaborates upon a number of service evaluation and relationship marketing variables which are considered to be the antecedents of customer loyalty in the extant literature and attempts to mark out their consequences in terms of loyalty specific behaviours:

#### 1. Service Quality

Grönroos (1983) stated that service quality contains two components – technical quality (“what” is delivered) and functional quality (“how” is delivered). Parasuraman, Zeithaml, & Berry (1988) noted that early researches projected service quality as an attitude shaped on the basis of disparity between customers’ expectations regarding a service to be received and perceptions of the service being received. Fogli (2006) defined service quality as “a global judgement or attitude relating to a particular service; the customer's overall impression of the relative inferiority or superiority of the organization and its services. Service quality is a cognitive judgement”.

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<th>Author(s), year</th>
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<tbody>
<tr>
<td></td>
<td>Empirical study of grocery brands.</td>
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<td></td>
<td>Found that brand commitment and brand support were necessary and sufficient conditions for customer loyalty to exist.</td>
</tr>
<tr>
<td></td>
<td>Produced a classification-loyals, habituals, variety seekers and switchers.</td>
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<tr>
<td></td>
<td>Provides guidance for mature rather than new or emerging brands.</td>
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McMullan (2005) A multiple-item scale for measuring customer loyalty development
Anderson and Sullivan (1993), Parasuraman, Zeithaml, and Berry (1994), Anderson, Fornell and Lehmann (1994), Fornell et al. (1996), Athanassopoulos (2000) and Cronin, Brady, and Hult (2000) postulated that empirical researches have proposed service quality as one of the main antecedents of customer satisfaction which is also treated as a primary source of loyalty.

Zeithaml et al., (1996) and Zeithaml (2000) posited that a customer’s behavioural intentions such as repeat purchase get affected with the perceived service quality. Anderson and Mittal (2000) claimed that a customer’s decision to recommend a company’s product through positive word-of-mouth depends upon the level of product quality. Ranaweera and Neely (2003) also confirmed that there exists a direct linear relationship between perceived service quality and customer retention. Simon, Seigyoung and Karen (2005) accepted the relationship between service quality and customer loyalty.

2. Customer Satisfaction

Mano and Oliver (1993) described satisfaction as a post consumption attitude or evaluative judgement which varies along with the hedonic continuum focused on the product. Rust and Oliver (1994) defined customer satisfaction or dissatisfaction as a “cognitive or affective reaction” that surfaces in the form of a response to a single or prolonged set of service encounters. Giese and Cote (2000) believed that there are three main components of consumer satisfaction namely cognitive, affective or conative (the type of response); the subject at which the response is directed; and the duration in between which evaluation is done. Besterfield (1994); Barsky (1995) and Kanji and Moura (2002) opined that customer satisfaction has been approached differently, which makes it complex. According to Levesque and McDougall (1996), satisfaction is understood as an overall attitude that customers hold towards a service provider. Halstead et al. (1994) perceived customer satisfaction as an affective response evoked from a comparison of the product’s performance with some pre-purchase standard during or after consumption.

Newman and Werbel (1973); Oliver and Linda (1981); LaBarbera and Mazursky (1983); Bearden and Teel (1983); Bitner (1990); Fornell (1992); Anderson and Fornell (1994); Dick and Basu (1994); Oliver (1996) contended that customer satisfaction has often been held responsible for customer loyalty during the past few years. Cronin and Taylor (1992); Cronin, Brady, and Hult (2000); McDougall and Levesque (2000); Chiou, Droge, and Hanvanich (2002) argued that literature provides empirical evidences of satisfaction influencing customer loyalty which is referred to as continuously positive buying behaviour of a customer towards a certain company or brand.

Oliver and Linda (1981); Cronin and Taylor (1992); Fornell (1992); Oliver et al. (1992); Reichheld (1993); Anderson and Fornell (1994) found that satisfaction is the most significant factor leading to customer loyalty. Abdullah et al. (2000) reviewed previous studies and found that they also indicate that customer satisfaction can affect customer loyalty and future purchase intentions.

Coyne (1989) established that loyalty and customer satisfaction share a weak relationship when customer satisfaction is low, moderate when customer satisfaction is intermediate and strong when customer satisfaction is high. Fornell (1992) pointed that high customer satisfaction will lead to
improved loyalty for the firm and it will also decrease customers' sensitivity towards competitive offers. Jones and Sasser (1995) also supported him stating that customers enjoying higher position on the satisfaction scale are more likely to be loyal with an increase in customer satisfaction which reflects the strong impact of satisfaction on loyalty. However, Jones & Sasser (1995) found that the satisfaction - loyalty relationship is neither simple nor linear and defection may take place among satisfied customers also.

3. Trust

Moorman et al., (1993) defined trust as "a willingness to rely on an exchange partner in whom one has confidence ". Morgan and Hunt (1994) found that trust exists "when one party has confidence in an exchange partner's reliability and integrity". Reichheld and Sasser (1990) opined that to achieve customer satisfaction and retention and consequently, long term business profitability, it's important to fulfil the promises.

Geyskens et al. (1996); Rousseau et al. (1998); Singh & Sirdeshmukh (2000) indicated that trust has been given great importance for building and maintaining long term relationships in business. Moorman et al., (1993); Morgan and Hunt, (1994); Sharma (2003) accepted trust as a significant variable for achieving relationship commitment and customer loyalty and it is a critical factor for relationships both logically and experientially. Geyskens et al. (1996); Doney and Cannon (1997); Rousseau et al. (1998); Singh and Sirdeshmukh (2000); Papadopoulou et al. (2001) confirmed that trust is needed to build long-term customer relationship in a volatile business environment. Gremler and Brown (1996) and Reichheld et al. (2000) perceived trust as a conceptual and important antecedent of customer loyalty. Working on similar lines, Garbarino and Johnson (1999) also identified trust as a driver of customer behavioural intentions that might lead to customer loyalty and found that trust and commitment are key antecedents to loyalty for customers who value relationships.

Bearden and Teel (1983); Cronin and Taylor (1992); Oliver et al. (1997); Selnes (1998) found a direct link between trust and loyalty whereas Doney and Cannon (1997) perceived trust as the principal antecedent of repurchase intentions. Lim et al. (1997); Garbarino and Johnson (1999); Chaudhuri and Holbrook (2001); Singh and Sirdeshmukh (2000) and Sirdeshmukh et al. (2002) found trust to be an important factor for loyalty building. Foster and Cadogan (2000) showed that in a company, trust works as an antecedent to attitudinal loyalty. According to Pavlou (2003) trust is a prerequisite for patronage behaviour. Ranaweera and Prabhu (2003) stated that trust is likely to result in customer retention when it comes to maintaining long term relationships between service provider and customer.

4. Commitment

Dwyer et al. (1987) defined commitment in service provider-customer relationships as "an implicit or explicit pledge of relational continuity between exchange partners". Moorman et al. (1992) described commitment as an enduring desire for preserving a valued relationship.

Jacoby and Kyner (1973) suggested that commitment is an important tool to differentiate loyalty from repeat purchase behaviour. Dwyer et al. (1987); Morgan and Hunt (1994); Gundlach et al.
5. Switching Cost

Jackson (1985) posited that switching cost is the sum of economic, psychological and physical costs. Gremler and Brown (1996) defined switching cost as the time, money and effort invested by the customer which makes it difficult to switch. Porter (1998) defined switching cost as the cost a customer incurs in the process of changing service providers. As put by Hellier, Rickard, Carr, and Geursen (2003), switching cost refers to the customer’s assessment of the personal loss or sacrifice in terms of time, effort and money associated with shifting to another service provider.

Klemperer (1987) suggested that switching cost can inspire brand loyalty among customers surrounded with a number of functionally identical brands. Fornell (1992) found switching cost to be an important factor among others that influence the relationship of customer satisfaction and customer loyalty. Hauser et al. (1994) analyzed the relationship between switching cost and satisfaction level i.e., an increase in switching cost leads to a decrease in satisfaction, thereby exercising a moderator impact on customer loyalty. Andreassen and Lindestad (1998) in their research found that customers may turn loyal if faced with high switching barriers or lack of real substitutes. Eber (1999); Jones et al. (2002); Bloemer et al. (1998); Burnham et al. (2003); Feick et al. (2001) posited that switching cost affects the customer’s responses to price level which in turn, influences customer loyalty. Jones et al., (2000) argued that switching cost operates as an antecedent of loyalty in both business-to-business and business-to-consumer transactions.

6. Corporate Image

Kunkel and Berry (1968); Doyle and Fenwick (1974); James et al. (1976) reviewed several conceptualisations of image that have been proposed in the past. Barich and Kotler (1991) proposed that corporate image is the overall impression of a company on the minds of the public. Nguyen and Leblanc (2001) found corporate image to be related with a company’s physical and behavioural aspects such as business identity, infrastructure, product/service lines, and employees’ quality of interaction during service encounter.

Lindestad and Andreassen (1997) perceived corporate image as an extrinsic information cue that may or may not influence customer loyalty and it applies for both existing and new set of customers. Yet, Andreassen (1999) posited that corporate image does affect customer loyalty in a positive manner. Rowley and Dawes (1999) revealed that brand or corporate image and customers’ expectations regarding the nature and quality of services influence customer loyalty. Ball, Coelho, and Macha (2003) suggested that customers may turn loyal towards a company or brand due to the fact that it is perceived in positive light among other customers. Kandampully and Hu (2007) established that corporate image bears a direct effect on and customer loyalty and the two are positively related. Wang (2010) suggested that
customers may act loyal to a company or brand due to the positive image it enjoys among other customers and this holds true especially in the context of credence goods which may also help in controlling the switching behaviour.

According to Reynolds et al. (1974-1975) it is found that customers’ overall assessment of corporate image is deemed to influence customer loyalty. Fishbein and Ajzen (1975) argue that attitudes and behavioural intentions have a functional relationship, which predict behaviour. Consequently, corporate image is considered as an attitude that must affect behavioural intentions such as customer loyalty (Johnson et al., 2001). Nguyen and Leblanc (2001) demonstrate that in three business sectors (telecommunication, retailing and education), corporate image and customer loyalty are positively related.

7. Service Recovery

Boshoff (1997) stated that “Mistakes are an unavoidable feature of all human endeavour and thus also of service delivery.” Duffy et al. (2006) defined service failure as the real or perceived service breakdown either in terms of outcome or process.

Gronroos (1988) suggested that the response a service provider emits in the event of service failure is known as service recovery. Zemke and Bell (1990) defined service recovery as a “thought-out, planned process for returning aggrieved customers to a state of satisfaction with the firm after a service or product has failed to live up to expectations.”

Johnston (2005) found that literature related to traditional services presents substantial work regarding the impact of service failure and recovery on customer loyalty. It brought out four major findings:

- Zeithaml et al. (1996); Roos (1999); Hays and Hill (1999); McCollough et al. (2000) opined that loyalty intentions get negatively affected with service failures and failures work as a prominent driving force for switching behaviour.
- According to Colgate and Norris (2001) service failures leads to the disconfirmation of expectations from service resulting in the negative effects on different types of loyalty, word-of-mouth and customer retention.
- Spreng (1995); Zeithaml et al. (1996); Tax and Brown (1998); Miller et al. (2000) contended that satisfaction with service recovery not only resolves the problem but also increases customer loyalty.
- McCollough et al. (2000) found that initial service failures negatively affect loyalty whereas recovery actions mitigate these effects.


Hart, Heskett, and Sasser (1990) stated that “a good recovery can turn angry, frustrated customers into loyal ones. It can, in fact, create more goodwill than if things had gone smoothly in the first place”. They
further argued that recovery encounters should be seen as an opportunity to achieve greater customer retention for service providers. McCollough, Berry, and Yadav (2000) proposed that since service failures play an important role behind customers' switching intentions, a proper understanding of service recovery may result in customer retention which, in turn, will affect the profitability of the firm.

8. Emotions
Izard (1977) found emotions to be primary motivators of behaviour. Westbrook (1987) discovered that the customers' experiences generated emotions and concluded that emotions have a direct relationship with post-purchase behaviour, such as re-purchase intentions. Allen et al. (1992) demonstrated that predicting purchasing behaviour could be less cumbersome with the understanding of "emotive experiences". Stauss and Neuhaus (1997) showed a significant relationship between emotions and loyalty. Studies conducted by Liljander and Strandvik (1997); Bagozzi et al. (1999); Yi-Ting and Dean (2001) also proved that emotions and behaviour share a link.

9. Communication
Anderson and Norus (1990) presented a new idea of communication that is an interactive dialogue between the company and its customers, which takes place during pre-selling, consuming and part-consuming stages. Ndubiri and Chan (2005) opined that communication is responsible for building awareness in the early stage, developing customer preference, convincing and encouraging the customers to make the decision to purchase.

Based upon the literature reviewed above, the following table is constructed for presenting the significant determinants responsible for the configuration of customer loyalty and their respective impact:
Table 1(b) Determinants of Customer Loyalty and their impact on loyalty

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Determinant</th>
<th>Contributing Author(s)</th>
<th>Consequential Behaviour</th>
</tr>
</thead>
</table>
| 1     | Service Quality   | • Anderson and Sullivan (1993); Parasuraman, Zeithaml, and Berry (1994); Anderson, Fornell and Lehmann (1994); Fornell et al. (1996); Athanassopoulos (2000); Cronin, Brady, and Hult (2000)  
• Anderson and Mittal (2000)                                                           | • Customer satisfaction (confirmation of expectations)  
• Positive behavioural intentions (Repurchase, recommendation, etc.)  
• Positive word of mouth                                                                 |                                                                                                                                                                                                                       |
| 2     | Customer satisfaction | • Cronin and Taylor (1992); McAlexander et al. (1994)  
• Liang and Wang (2007)  
• Fornell (1992)  
• Barsky (1992)                                                                 | • Future Purchase Intentions (Repeat purchases)  
• Customers’ active participation in terms of buying additional services and spreading favourable word-of-mouth communication  
• Decrease in customers’ sensitivity towards competitive offers  
• Increased market share from repeat business and referrals                                                                 |                                                                                                                                                                                                                       |
| 3     | Trust             | • Doney and Cannon (1997)  
• Bendapudi and Berry (1997)  
• Morgan and Hunt (1994)  
• Ranaweera and Prabhu (2003)                                                        | • Repurchase intentions  
• Reduction in the cost of negotiations and removal of the customer's fear of opportunistic behaviour by the service provider  
• Formation of highly valued exchange relationships  
• Maintenance of long term relationships                                                                 |                                                                                                                                                                                                                       |
| 4     | Commitment        | • Beatty et al. (1998); Morgan & Hunt (1994)  
• Pritchard, Havitz and Howard (1999)                                                | • Liking and emotional attachment to the firm  
• Resistance to switching behaviour                                                                 |                                                                                                                                                                                                                       |
<table>
<thead>
<tr>
<th>S. No.</th>
<th>Determinant</th>
<th>Contributing Author(s)</th>
<th>Consequential Behaviour</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Switching cost</td>
<td>• Kon (2004)</td>
<td>• Repeat purchase behaviour</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Fornell (1992)</td>
<td>• Impact on customer satisfaction</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Aydin &amp; Ozer (2005)</td>
<td>• Dissuade customers’ attraction towards competitive brands</td>
</tr>
<tr>
<td>6</td>
<td>Corporate image</td>
<td>• Sirgy (1982), (1985); Zinkham &amp; Hong (1991)</td>
<td>• Image congruence</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Tepeci (1999)</td>
<td>• Reinforcement of self-image</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Nguyen and Leblanc (2001)</td>
<td>• Repeat patronage</td>
</tr>
<tr>
<td>7</td>
<td>Service recovery</td>
<td>• Swanson and Kelley (2001)</td>
<td>• Affecting favourable behavioural intentions</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• McCollough, Berry, and Yadav (2000)</td>
<td>• Impact on switching intentions</td>
</tr>
<tr>
<td>8</td>
<td>Emotions</td>
<td>• Westbrook (1987); Allen et al. (1992); Laverie, Kleine, &amp;</td>
<td>• Impact on post-purchase behaviour such as</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Kleine (1993); Mano &amp; Oliver, (1993)</td>
<td>- repeat visit,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Westbrook (1987); Mano &amp; Oliver (1993)</td>
<td>- recommendation and</td>
</tr>
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<td></td>
<td></td>
<td></td>
<td>- repurchase intentions</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Influence the post consumption satisfaction judgement</td>
</tr>
<tr>
<td>9</td>
<td>Communication</td>
<td>• Ndubisi and Chan (2005)</td>
<td>• Responsible for</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- building awareness in the early stage,</td>
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<td>- developing customer preference, convincing and</td>
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<td></td>
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<td></td>
<td>- encouraging the customers to make the decision to buy</td>
</tr>
</tbody>
</table>

The above presented literature clearly states that customer loyalty formation is dependent on the variables mentioned in the above table. Customer loyalty, thus formed can be assessed through the following functional relationship:

\[ CL = A + w_1(SQ) + w_2(CS) + w_3(T) + w_4(C) + w_5(CL) + w_6(SC) + w_7(SR) + w_8(E) + w_9(Cm) \]

Where, \( A \) is a constant. \( w_1, w_2, w_3, \ldots, w_9 \) represent the relative weights of the factors contributing in formation of customer loyalty as literature suggests that each of the determinants exerts a different level of influence over development of loyalty.

\[ CL = \text{Customer Loyalty}, \quad SQ = \text{Service Quality}, \quad CS = \text{Customer Satisfaction}, \quad T = \text{Trust}, \quad C = \text{Commitment}, \]
CI = Corporate Image, SC = Switching Cost, SR = Service Recovery, E = Emotions, Cm = Communication

The relationship depicted above can act as a base for construction of a loyalty measurement scale. It would be interesting to test the relationship between customer loyalty and its antecedents across different industries and cultural contexts. Unearthing the relative weights of these antecedents in the process of customer loyalty formation can lead to significant revelation for the loyalty strategists as they can focus on the factors in the order of their relative importance and bring out an effective loyalty program for their firm. Further, the relationship among various antecedents of customer loyalty and their moderating impact on each other also need to be tested for a more lucid understanding of their respective roles in customer loyalty formation.

Outcomes of Customer Loyalty:

Loyalty is principally valued for its outcomes since it’s the outcome behaviours of loyal customers that exercise a huge impact over the revenues and growth of a firm. The literature provides a multitude of behavioural, attitudinal and cognitive outcomes of customer loyalty some of which are widely recognized and accepted whereas others demand further probing for clarity.

The manifestations of loyalty among customers are generally pinned down through their actions or their attitude towards the company or a particular product/ service. However, recent literature suggests that another outcome of loyalty is the customer preferring a particular service provider to others based upon the conscious evaluation of brand attributes.

Jones and Taylor (2007) affirmed that advanced literature has proposed loyalty to be a three dimensional construct as the resultant outcomes of loyalty can broadly be classified into behavioural, attitudinal and cognitive loyalty. The following section enlists these outcomes of customer loyalty as identified through extensive survey of literature:

1. Behavioural Loyalty

Jones and Taylor (2007) noticed that the behavioural outcomes including repeat buying intentions or customers’ chain buying behaviour has been the focus of initial researches in the area of service loyalty. Reichheld (1994) asserted that the reason behind most of the customer loyalty researches considering customer retention as a proxy for loyalty is that retention can be calculated and a precise net present value can be obtained. Behavioural outcomes of loyalty include:

i) Repurchasing from the same service provider (Zeithaml et al., 1996; Jones et al., 2000),

ii) Lower switching intentions (Bansal and Taylor, 1999; Dabholkar and Walls, 1999), and

iii) Making all purchases in a particular category from a single service provider (Reynolds and Beatty, 1999; Reynolds and Arnold, 2000).

2. Attitudinal Loyalty

Dick and Basu (1994); Pritchard et al. (1999) found that loyalty can be seen not only in its behavioural manifestations but in the attitudinal dispositions towards a service provider. Jones and Taylor (2007) argued that relative attitude (an emotions based assessment of the brand) has mostly been put across as following:

i) Recommending the service provider to others (Butcher et al., 2001; Javalgi and Moberg, 1997),

ii) Strong preference to the service provider (Mitra and Lynch, 1995),
iii) Feeling a sense of affiliation with the product, service, or organization (Fournier, 1998), and iv) Altruistic behaviour which includes helping the service provider or other customers for better service delivery (Patterson and Ward, 2000; Price et al., 1995).

3. Cognitive Loyalty

Bloemer et al. (1999); de Ruyter et al. (1998); Oliver (1999) confirmed cognitive loyalty as another form of loyalty. Lee and Cunningham (2001) described cognitive loyalty as a conscious assessment of a brand and its attributes or a conscious assessment of the advantages and incentives of repurchasing which as suggested by Dwyer et al. (1987), makes customers deem a particular service provider to be superior to others. Jones and Taylor (2007) reviewed that loyalty based upon the cognitive judgement of the customers is expressed in the following ways:

i) Occupying a prominent space in the mind of the customer (Dwyer et al., 1987),

ii) Being the first preference of the customer (Ostrowski et al., 1993),

iii) Lesser sensitivity towards price fluctuation (Anderson, 1996; de Ruyter et al., 1998),

iv) Considering a service provider exclusively for a particular service (Gremler and Brown, 1996), and

v) Identifying a service provider as an extension of one’s self and accepting this by using terms such as “my service provider”, or by including oneself with the service provider and referring collectively with “us” and “we”. (Butcher et al., 2001).

Above mentioned literature substantiates the distinct forms that outcomes of customer loyalty can take. The functional relationships between customer loyalty and its outcomes are as follows:

\[
CL_n = f(BO, AO, CO)
\]

\[
= P + p BO + p AO + p CO
\]

\[
CL_n = f(RI, SI, EI)
\]

\[
= A + a RI + a SI + a EI
\]

\[
CL_n = f(RA, WR, A)
\]

\[
= B + b RA + b WR + b A
\]

\[
CL_n = f(WP, EC, I)
\]

\[
= C + c WP + c EC + c I
\]

Where, P, A, B and C represent the constant values whereas \( p_i, p_1, a_i, a_1, b_i, b_1 \) and \( c_i, c_1 \) are the relative weights of variables accompanying them.

\[
CL_n = \text{Overall Customer Loyalty}, \ BO = \text{Behavioural Outcomes}, \ AO = \text{Attitudinal Outcomes}, \ CO = \text{Cognitive Outcomes}
\]

\[
CL_n = \text{Behavioural Loyalty}, \ RI = \text{Repurchase Intentions}, \ SI = \text{Switching Intentions}, \ EI = \text{Exclusive Intentions}
\]

\[
CL_n = \text{Attitudinal Loyalty}, \ RA = \text{Relative Attitude}, \ WR = \text{Willingness to Recommend}, \ A = \text{Altruism}
\]

\[
CL_n = \text{Cognitive Loyalty}, \ WP = \text{Willingness to pay more}, \ EC = \text{Exclusive Consideration}, \ I = \text{Identification}
\]

The above illustrated relationships between customer loyalty and its outcomes hold significance for the marketers intending to design fruitful loyalty programs. With an understanding of the various sets of outcomes of customer loyalty, marketers can effectively segment their customers based upon the type of loyalty they exhibit and thereby, design effective loyalty programs to enrich and reinforce the existing loyalty.
Discussion:

Customer loyalty has emerged as an effective means of business growth. Loyalty experts such as Rosenberg et al. (1984) have proposed that it is cheaper to retain a customer than acquire a new one as far as cost is concerned. Moreover, loyal customers tend to stay with the company for an elongated duration which results in higher buying frequency as well as larger volumes of purchases over a period of time saving advertising and other promotional costs that generally occur in case of attracting new customers. Companies with steady customer loyalty enjoy better financial results triggered from higher and more frequent purchases, shorter sales cycles, positive word-of-mouth and a strongly favourable attitude.

The factors leading to loyalty and their consequences in terms of loyalty behaviours are worth discussing as a clear understanding of these factors can lead to effective loyalty practices for they provide a concrete base for designing efficient loyalty programs. Moreover, awareness about the various manifestations or outcomes of customer loyalty can pave the way for customizing these loyalty programs and bring out tangible results in terms of cost efficiency, wide reach and increased profitability.

Service quality leads to customer satisfaction, positive word-of-mouth and favourable behavioural intentions. Customer satisfaction enhances the customer’s desire to stick with the company in the long run and encourages repeat buying behaviour. It also results in cross selling opportunities and favourable word-of-mouth. Other antecedents such as trust and commitment work hand-in-hand when it comes to loyalty development and result in repurchase intentions, dedication towards the company and an emotional connect with it which increases the possibility of long term customer relationships. Commitment deals effectively with the switching intentions by fostering a resistance towards competitive offerings however attractive they may seem to be.

Switching cost is another important antecedent of loyalty that is directly related to the level of
satisfaction among the customers. Corporate image of a company affects the concept of image congruence and encourages repeat patronage.

Service failures can be managed but can’t be stopped completely. Service recovery, though designed to tackle failure, can win customers back with greater level of satisfaction and trust. If managed appropriately, service recovery can lead to positive behavioural intentions and reduce the switching intentions. Emotions are an inseparable and powerful part of any customer experience. Positive handling of emotions results in favourable behaviours such as repeat visit, repurchase and recommendation. Communication is the most vital part of any relationship whether inter-personal or business. It helps in creating awareness and enables decision making in favour of the company.

Customer satisfaction and loyalty strongly influence the process of acquiring new customers. Positive word-of-mouth from the existing customers may increase the company’s revenues greatly but negative feedback from the same customers may also ruin the profits and prospects for the company. A satisfied customer shares his consumption experience with 3 people on an average whereas, a dissatisfied customer does the same thing and the number of people may range anywhere from 8 to 16 on an average. The negative impact a dissatisfied customer may leave on existing as well as potential customers of the company is significant.

A customer can express his degree of loyalty towards a service provider by either displaying a positive attitude or indulging in favourable actions or making conscious evaluations and finding a particular service worth sticking to.

Behavioural loyalty is generally seen in the form of repurchase intentions, low level of inclination towards switching and exclusive intentions. On the other hand, attitudinal loyalty is based upon the strength of preference and willingness to recommend. Cognitive outcomes of loyalty are characterized by the customer’s consideration of a service provider above others in the same category stemmed from his evaluation of the benefits associated with continued patronage.

**Significance of the Study:**

The above mentioned literature and findings call for the establishment of a research question pertaining to a comprehensive model for comprehension and elaboration of the assessment of customer loyalty and resultant behaviours.

The study intends to provide a framework for:

- Development of a scale for assessing customer loyalty.
- Identifying the impact of a particular class of loyalty in terms of its contribution to the organization.
- The above identified framework would prove to be of great significance for service organizations in appraising different loyalty programs and also in segmenting customers depending upon organizational requirements.

**Implications**

Survival and growth of a company in today’s complex business environment characterized with ever-increasing competition and entry of new market forces demand a broad vision as well as strong strategies directed at customer relationship management. Companies need to understand and assess the potential of retaining customers in the long run and make customer centricity a focal point.
of all business activities. Losing a customer not only results in decreased revenues but also acts as a warning for the company. While difficult economic conditions may pose challenges for the company, what matters is how the company deals with them; the company may either locate opportunities in these conditions or lapse in the turbulent waters. To strengthen its position in the market and achieve better growth rate, a company needs to foster trust among its target audience, offer products and services with significant differentiation and understand customers’ expectations.

This study bears important implications for managers as it brings to light the antecedents as well as outcomes of customer loyalty. With heightened use of technology in service delivery, little scope for differentiation is left. A service firm’s approach to customer relationship is what singles it out against competitors. Customer loyalty has become the new mantra for sustained growth and profitability. It is important to understand and communicate with the staff about the role customer loyalty can play in the long term interest of business. Service personnel should be educated and trained for comprehending and managing customers’ expectations with the right attitude. Further, the antecedents of loyalty can serve as an effective base of brand building strategies. A careful analysis will reveal the factors a service firm lacks in terms of loyalty thereby enabling the managers to rectify the situation with appropriate loyalty building practices. Managers can develop loyalty programs specifically designed for different loyalty groups as per the loyalty outcomes and work upon enhancing the existing level of customer loyalty.

Scope for Future Studies

This study presents a universal set of factors leading to customer loyalty on the basis of an extensive survey of literature. Future research could focus upon identifying and testing the context specific antecedents of customer loyalty. Distinct markets and consumer groups with varying psychographic characteristics may display different loyalty attitudes and behaviours driven by various combinations of loyalty antecedents. It would be interesting to find out industry specific set of factors that determine loyalty.

Further, the antecedents and their relationships with customer loyalty need to be tested statistically in order to establish their validity. Different factors exert varying levels of influence over loyalty. Determining their weight in overall loyalty assessment would be a significant contribution in the body of customer loyalty literature.

Each of these antecedents shares a connection with others in the group. For example, customer satisfaction is often seen as a consequence of maintaining good product quality. Similarly, service recovery affects a customer’s switching intentions to a considerable extent. Future research may test and establish the relationship between various antecedents of loyalty and their relative importance in the overall loyalty score of a company.
References


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Advertising during Recession:
An Agency Perspective from India

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Aarzoo Daswani
Mari Sudha

Abstract
Research has addressed the issues of advertising during recession mostly from the industry perspective or at the conceptual level. The present study has explored the advertising agency’s viewpoint of recession and its subsequent fallouts in the industry. The study was based on twenty seven in-depth interviews conducted with top management representatives of 23 major advertising firms in India. The questions were related to the external and internal changes that take place in the advertising agency during recession. The findings suggested that there were changes in the advertising budget, advertising strategies, advertising appeals, media and internal changes in the agency during recession.

Keywords: Advertising, Recession, Qualitative Study, Agency Perspective, India
1. Introduction

The global economic meltdown of 2008 resulted due to a credit crunch and affected most countries of the world including India. Firms looked to redefine their strategies and did a rethink to obtain proportionate returns through smart moves (Trivedi, 2008). The slowdown resulted in widespread gloom across the country and affected various business sectors like Finance & Banking, Transportation, Telecom, etc. Most of these sectors depend upon advertising for their business.

Pitch-Madison Media Advertising Outlook (highlights) showed that the advertisement industry was expected to grow by 2% in 2009 as compared to 15-20% during the previous year (Chandran, 2009). The effect of recession on advertising exists namely because of two reasons: (1) Advertising budgets are typically set as a percentage of sales. (2) Some marketers think that advertising will not change the demand of products in a weak market and so they cut their advertising budget (Baxter; 1999; Dyson, 2008).

During recession, companies expect more returns than normal market returns. They want to reduce costs in various aspects of advertising. In television commercials, this is carried out by re-running the same commercials and shorter duration ads (Chatterjee, 2008). In print media, full-page advertisements shrink in size (Mohanty, 2008). In outdoor media too, hoardings are decreased by 20% (Aikara, 2008). The clients also cut their budget, forcing advertisers to reset their targets resulting in slow growth (Trivedi, 2008).

In such a scenario, a relevant question would be to explore what the advertising agency thinks about recession and how it affects the overall performance of the advertising function. Thus, the present study explores the advertising agency’s viewpoint of recession and its subsequent fallouts in the industry. The rest of the paper is organized as follows. The next section provides a brief literature review of the key papers dealing with advertising and recession. This is followed by the methodology and the data collection procedure. Section 4 presents the findings and discussions. Lastly, the managerial implications derived from the study are presented.

2. Literature Review

Recession leads firms to cut back expenditures including advertising. However, there are very few papers that have discussed the effects of recession on advertising from an empirical perspective. A literature search of the available databases such as EBSCO, WARC, PROQUEST, and ABI INFO yielded around 40 studies that have analyzed the effect of recession on advertising expenditure and only 10 were empirical studies. The primary studies focused on the macro aspects as well as the relationship of advertising with the performance of the firm.

2.1 Effect of Advertising on Sales during Recession

Studies investigating the effect of advertising on sales found that firms increasing ad spend during recession performed better than those who reduced it (Vaile, 1927). Similar findings were found in a study conducted by Meldrum and Fewsmith (1979) and subsequently in McGraw Hill Research, (1986). Similarly, Kamber (2002) analyzed the effect of advertising on sales over a six year period and concluded that the group of companies who maintained/increased ad spend had a higher sales growth than those that had decreased it.
2.2 Effect of Advertising on Profitability During Recession

The effect of advertising expenditures on firm profitability was studied by various researchers (for ex. Frankenberg and Graham, 2003) who found that increasing the advertising expenditures significantly increased the earnings of the firm during recession. Similarly, Kijewski (1982) found that firms experienced loss in ROI during a recession as compared to during a normal period. Studies also found that decreasing advertising costs did not give a boost to the short-term profits and led to a significant damage in the long-term profit (Carter, 2009). Biel and King (1990) also studied the impact of advertising on ROI and found that all the business units experienced loss in ROI during recession and reduction in the advertising expenditure did not decrease these losses.

2.3 Effect of Advertising on Market Share During Recession

Market share was also a key variable in measuring the performance of the firm. A research study carried out by Biel and King, (1990) showed that there was a 0.5% increase in the market share of firms that increased their advertising expenditure during recession. In comparison, firms that increased ad spend by 20% to 100% had a 0.9% increase in market share. A related research by Baxter (1999) found that companies that increased their spending on advertising during recession performed better.

2.4 Macro Perspective of Advertising During Recession

In addition to research conducted on firms’ performance, studies were also conducted at the macro level which indicated that advertising expenditures were sensitive to changes in the Gross-Domestic Product (GDP) of an economy (Tellis and Tellis, 2009; Deleersnyder et al., 2009). Most of these studies indicated that an increase in advertising expenditures was actually beneficial for the firm. It was very crucial to understand the relationship of advertising expenditure with the economy, apart from the performance of the firm.

There have been other studies that have focused on other aspects of advertising during recession such as appeals used during recession (Carter, 2009; Elliott, 2009), budget allocation during recession (Dyson, 2008) or creative strategy during recession on reputation and goodwill (Grande, 2008; Goorha, 2008; Agarwal, 2008; Kannan, 2009). The review of all these studies gave an idea about the research carried out in the area of advertising during recession. However, all these research studies were concerned with western countries and they have not focused on issues faced by the Asian counterparts. Moreover, there has not been a single study to the author’s knowledge that has tried to address the issues related to advertising during recession from the agency perspectives and include the internal issues of the agency during recession.

Thus we generate the research questions based as:

RQ1. What are the macro level effects of recession?
RQ2. What are the effects of recession on Advertising objectives and Appeals?
RQ3. What are the effects of recession on Media?
RQ4. What are the effects of recession on the internal issues of the agency?
3. Methodology

Most empirical studies on the effects of recession on advertising have used secondary data pertaining to companies in terms of sales data, market share and profitability. However, the objective of the present study was to understand the holistic view about advertising during recession from the agency professionals’ perspective. Thus, in-depth interviews of the respondents, namely the Managing Directors and Chief Executive Officers were conducted. The premise of using in-depth interviews could be attributed to the concepts of grounding theory in reality (Glaser and Strauss 1967; Strauss and Corbin 1990; Goulding 2000). Since this was a relatively untouched area, in-depth interviews would help to develop new, less tested theories by collecting data first and then drawing the embedded theory from the data itself.

3.1 Study Design

Initial in-depth interviews were conducted with advertising professionals from three advertising agencies based in India. The objective of this exercise was to create the interview protocol based on which the main study was conducted. The information gathered from the preliminary interviews were then juxtaposed with the research questions and advertising literature that included objectives of advertising, type of advertisement, ad appeal, type of media for different products and different geographical areas. Sector specific questions that were related to advertising expenditure were also included in the interview.

The main study was conducted on Managing Directors and Chief Executive Officers of major advertising agencies of India. These agencies were selected on the basis of the number of clients handled by their agency. This criterion was used for the study on the premise that if the agency has more clients from different sectors, it can offer a holistic view about advertising pertaining to these sectors. Thus, the top 25 advertising agencies of India were short listed out of which 23 agreed to take part in the study. Twenty seven respondents (all belonging to the top management) from the 23 advertising agencies were interviewed. In some cases, a total of more than one division of one agency was covered so that more clarity could be achieved pertaining to the agency’s perspective of advertising during recession. The researchers themselves conducted the interviews to avoid dilution of vital information due to third party interviewers. The interviews were recorded and the interviewer occasionally wrote down information which he/she thought required special mention. Each interview lasted for 1 to 1.5 hours and the entire process of data collection was completed in a span of 45 days.

3.2 Data Analysis

All the recorded interviews were first transcribed and then the content was analyzed. The four research questions guided the analysis. In this regard, procedures of coding and concept and theme generation based on the data were conducted following some of the steps suggested in the Grounded Theory framework (Strauss and Corbin 1990). Since there were no studies using the same methodology, there was no chance of using an ’a-priori’ coding scheme. Thus the codes were based on the terms used by informants (in vivo codes). The interview process helped generate around 200 codes including the semantically similar ones. Two researchers independently conducted the open coding procedure. Once it was carried out, the results were matched with each other and most disagreements were resolved. The inter coder reliability thus was found to be 92%. Thereafter the
codes were categorized and organized into tree diagrams. At this stage, conceptualization of the open codes was performed in conjunction with prior literature. A sample of the codes and the encompassing concept is provided in Table 1.

<table>
<thead>
<tr>
<th>Category</th>
<th>Concept</th>
<th>Codes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Internal Strategy in Recession</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internal Structure</td>
<td>Low agency cost, research, multi-tasking, cross functional work, specialized training.</td>
<td></td>
</tr>
<tr>
<td>Client Interface</td>
<td>Low budget, minimum expenditure, bargain, media cost.</td>
<td></td>
</tr>
<tr>
<td>Internal Strategy</td>
<td>Unaffected products, short term projects, alternate media plans, public relations.</td>
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</tbody>
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The next step was Axial coding (Strauss and Corbin 1990) in which the concepts were aggregated under broader categories. The findings from such categorizations are given in the next section.

4. Findings and Discussions

Overall findings suggested that recession was perceived as a dreaded phase that changed various aspects of an industry, including advertising expenditure. The findings of the study suggest that recession does affect the advertising efforts of various companies as well as sectors. A change in the objectives of advertising during recession was also observed. The type of advertising for different product categories was also found to undergo alteration. Effects of media and advertising appeals specific to product categories were found to change. Geographical areas too were found to have an impact on the change in advertising strategies during recession. The following subsections discuss the major findings from the study. Following the Glaserian (Glaser and Strauss, 1967; Strauss & Corbin, 1990) approach, the findings and discussions have been integrated into the same subsections.

4.1 Effect of Recession on Industries/Sectors

According to the findings of the study, recession affected various sectors like FMCG, Luxury, and Information Technology, etc. In some sectors, this effect is positive whereas in others it is negative or absent. The findings of the study supported studies conducted earlier that have also shown the effect of recession on advertising efforts. For luxury products, advertising reduced during recession as one respondent opined,

“Consumers can reduce the spending on luxury products but not on daily need products. Fundamental utilities and basic necessities are a part of fast moving consumer goods and do well even during recession as people need these goods for survival.”

Therefore, sectors like FMCG, consumer products, education, public service units, government sector and personal care products were found to increase.
their ad expenditure in recession. Similar phenomenon was observed in companies like P & G and Kellogg in the western context during recession (Grande, 2008).

Sectors like Information Technology, Business Process Outsourcing, Telecom, Real Estate, Consumer Durables, and Service sector that includes Financial Services and Hospitality were found to have decreased their advertising budget during recession. Previously conducted studies have also shown that sectors like information technology, business process outsourcing, telecom, and real estate have decreased their advertising budget during recession (Pinto, 2006; Goorha, 2009; Bhushan, 2008; Kannan, 2009; Chatterjee, 2008). Banking and financial sectors were also major sufferers in terms of decrease in ad spend due to recession; a fact which also has previous support from literature (The Economic Times, 2008). There were sectors which were unaffected by recession such as Health Care Products, Television Channels, Matrimonial Sites, Job-Related Websites and Hospitals. The education sector was perceived to be very important for individuals at every phase of life, even during recession. One respondent quoted,

“See, you do not stop studying during recession. On the contrary you look for opportunities for higher studies during recession; say if you had a graduate degree and lost a job. What do you do? Study!”

In the same way, Health sector advertising too was found to be unaffected by recession, supporting earlier research (Bali, 2009).

### 4.2 Effect of Recession on Objectives of Advertising

The findings of the study suggested that there was a change in the objective and reason for advertising during recession. Various studies conducted prior to this study supported this aspect of advertising during an economic slowdown. Recession is a good time to advertise as the ad clutter is less thereby increasing visibility (Hillier, 1999). In the present study, it was found that during recession the prime focus of the agencies was to increase sales and create visibility for the brand in the market (Refer to Table 2). Both these objectives have been found in prior studies (Werner, 1991).

<table>
<thead>
<tr>
<th>OBJECTIVE</th>
<th>MODE/RANK</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase Sales</td>
<td>1</td>
</tr>
<tr>
<td>Creating Visibility</td>
<td>2</td>
</tr>
<tr>
<td>Creating Awareness</td>
<td>3</td>
</tr>
<tr>
<td>Refresh the Brand</td>
<td>4</td>
</tr>
</tbody>
</table>

Table 2: Advertising Objectives during Recession

This study also observed that advertising could be used to maintain the market share of the clients. Moreover, some respondents opined that recession was also a good time to increase market share by increasing advertising.

### 4.3 Effect of Recession on Type of Advertising Appeals

The respondents opined that different types of advertising were required for different product categories during recession. Rational and interactive advertising gained more prominence during recession, in both high and low involvement products. On the other hand, usage of celebrity and animated characters were least preferred by advertising agencies.
This study concluded that in case of low involvement products, the focus was more on emotional advertising. One respondent commented,

“As the price is low, consumers tend to think from their heart and accordingly make purchase decisions. When an emotion like humour is used in the advertisement, then they get involved with the brand.”

Humour was used in the ad campaign so that consumer mood could be transformed and the message can be conveyed, which was again supported in literature (Werner, 1991). In case of high involvement products, educational advertising was taken into consideration while designing the advertisement. This was because consumers needed reasons for buying the products or making the brand choices. Many respondents felt that advertising agencies highlight the “value for money” concept to attract the consumers during recession. In both the product categories the agencies opined that fear appeal was least preferred since the audience was already in an insecure state of mind. However, most agency representative opined that price, coupled with any appeal was the most important motivator to the customer during recession.

### 4.4 Type of Media

While developing the media mix for the client, advertising agencies gave first priority to newspapers, television and direct marketing for both low and high involvement products. In case of low involvement products, radio and billboards were also found to be among the preferred media whereas for high involvement products, internet and magazines were in the next level of priority. Non traditional media was also found to be an effective tool to reach customers during recession as one respondent opined,

“See, the reason why we use it are many. It can actually catch the audience attention where he/she is least expecting. You may not be expecting a banner of a brand at a pub or even in your office premises. But it may do the job!”

However, the type of non traditional media used varied depending on the nature of the product i.e. high/low involvement. For low involvement products, merchandising at outlets, local cable networks, event sponsorship, point of sales, multiplex advertising, cross promotions were found to be preferred methods. For high involvement products, institutional advertising, showroom advertising, dealer display, experience advertising, mall branding, etc. was conducted (Refer to Figure 1).

*Figure 1 Non Traditional Media Used in Recession*
4.5 Geographical Area and its Impact on Advertising Strategies
The study findings also suggested that the type of advertising approach differed depending on the demographics of an area. In rural areas, wall painting, network marketing, road shows, radio advertising, road painting, street plays, small pack promotions and transit media particularly buses were utilized. In the urban scenario, value for money was the prime motive of advertising agencies. In order to achieve this, agencies did event marketing, reference marketing, mobile marketing, mall advertising and engagement advertising.

4.6 Issues Faced by Agencies during Recession
The study also enlightened on the various issues faced by the advertising agencies during recession from the internal perspective. Clients preferred to hold money in crisis and offered low budgets for advertisements. They give bare minimum expenditure to the agencies for advertisement. Moreover media bargain was very easy during recession. Thus, during recession advertising agencies in India tended to focus on those products that are unaffected by recession. They even considered small projects of mid sized or small companies as the focus was on the short term goal as compared to long term. They designed retention programs where rewards were given to loyal customers, worked on the database of customers, did rigorous research, developed alternate media plans for best solutions and built brands through public relations. They operated at a low agency cost. Data analytics was used within the agencies and skills were developed among the employees so that one employee could handle different activities. There was a question on retrenchment of agency staff during recession, but most of the respondents avoided the question replying that it was a sensitive question.

5. Managerial Implications
The present study has brought a fresh perspective from the agency side of advertising during recession. The overall findings suggested that recession affected both the advertising agency and the clients. From the client’s side the most important change that took place was the reduced budget. As a result the clients were ready to accept shorter length commercials but those with more impact. The clients also expected the agencies to identify advertising opportunities and spot the changes in consumer needs. The clients became very result oriented during recession as they wanted their money’s worth. For an advertising agency the main aim was to provide sensible solutions to the clients where the emphasis was on value-based campaigns. Advertising agencies considered small and mid sized project to focus on short term goals rather than on the long term goals. They operated at a very low cost and encouraged their employees to work on different projects. New technology and media can be used by these agencies through which costs can be saved and a wider exposure can be obtained. Moreover, they need to consolidate their divisions and business and they need to integrate specialized units so that they can work together (Refer Figure 2).
6. Scope of Future Research

The present study was qualitative in nature. Similar studies can be carried out that could be quantitative in nature. In order to have more clarity about recession and its impact on the advertising function, research could be conducted including other stakeholders’ views such as consumers, clients and policy makers. This would enable to develop a holistic view of the impact of recession on advertising. Similar studies can be conducted in other countries of Asia to understand the difference in advertising approach. Comparison of these approaches could be made to understand the cross cultural effect of recession on advertising and new dimensions could be identified.
References


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Perception and Attitude of Farmers and Agri Firms Towards Commodity Finance

Babita Kumar
Gagandeep Banga
Ajay Jindal

Abstract
Commodity financing is financing against the pledge of warehouse receipts of Central Warehousing Corporation (CWC) / State Warehousing Corporation (SWC) and private warehouses / cold storages / godowns. The goal of financing against the warehouse receipt is to enable small farmers to access finance against their commodities at competitive rates using a process that is fairly simple to execute. Such post-harvest financing will give farmers the option to wait during the usually low prices offered immediately after harvest, and sell at a later time, when prices tend to rise. Commodity finance is getting popular all over India. States like Punjab, Haryana and Uttar Pradesh are pioneers in commodity finance in agri commodities as major crops like wheat, paddy and cotton are grown in large quantities in these states. In Punjab where wheat, rice and cotton are the major crops grown, banks have started providing commodity finance on these crops. The present study was undertaken to understand the perception and attitude of farmers and agri firms of Punjab towards commodity finance. A list of farmers and agri firms availing commodity finance in Amritsar and Bathinda was obtained from financial institutions providing commodity finance to them. Out of this list, 50 farmers and 30 agri firms availing commodity finance were chosen on the basis of random sampling technique. Commodity finance is availed by large farmers and this facility has still not percolated to small farmers. Majority of the farmers (82%) borrow less than Rs 5 lakhs, and 18% borrow between Rs 5 – 10 lakhs on a per annum basis. Most farmers (65.79%) arrange their money from banks, and 34.21% from middlemen. Most of the respondents are charged between 12-13% rate of interest. The agri firms feel that commodity finance is safe and more beneficial from other means of finance. Commodity finance has more benefits, but it is not easily available and it depends on the availability of warehouses. Farmers and agri firms who avail of commodity finance are overall satisfied with the services and dealings with banks.

Keywords: Attitude (M-31), Perception (M-31), Commodity Finance (G-10), Farmers (Q), Agri Firms (Q-13)
Introduction

Commodity Finance has been described as short term financing provided to international multi commodity trading companies, commodity producers in industrialised countries and market players involved in oil and gas, metals and minerals, and agri-commodities by Rabo Bank (Trade and commodity finance, 2012). According to a study conducted by UNCTAD Secretariat in 2001, structured finance/ commodity finance is the art of transferring risks in trade financing from parties less able to bear those risks to those more equipped to bear them in a manner that ensures automatic reimbursement of advances from the underlying assets which are in the form of oil in the ground, plantations to produce cocoa or coffee, even fields to produce annual crops such as cotton or wheat etc. Structuring techniques make it possible to raise funds on the basis of this wealth, funds that can then be used to access this wealth and convert it into ready money. Structured commodity finance is particularly relevant for commodity companies in countries that are considered as risky by financiers. Structured finance allows many of these companies to obtain finance at reasonable terms. But there are a number of obstacles to structured finance which do not exist in the case of more traditional forms of financing. In many countries, the understanding and awareness of structured financing techniques and modalities are quite weak, and this has often resulted in legal and policy barriers to this form of finance.

Facilitating access to finance and increasing investment is of the essence for commodity production and trade; it is crucial to the livelihoods of the most vulnerable producers and exporters within the commodity supply chain. Together with the emergence of newer threats bearing directly on the commodity sector (i.e. food and energy security and climate change), the global crisis has underscored a crucial need to understand the problems faced by small-scale producers and exporters of commodities, and to scale up the financial resources required in commodity-dependent developing countries. The need to design appropriate policies and mechanisms to enhance access to commodity finance in low income commodity-dependent developing countries has never been more urgent. IFC (International Finance Corporation) launched the Critical Commodities Finance Program (CCFP) to channel funds to support the global trade of commodities. Through this innovative public-private partnership, IFC will maintain credit for traders and intermediaries that move food and agricultural products in and out of low-income countries. By supporting commodity-backed finance and in partnerships with banks, the CCPF will promote commodities as an asset class and encourage local and regional banks to participate in funding critical economic sectors, which will ultimately help increase access to finance and develop local markets (International Finance Corporation, 2012). Many international agencies like EBRD (European Bank for Reconstruction and Development) are actively involved in evolving loans against warehouse receipts in developing legislations and institutions for adequate warehouse licensing, inspection, insurance systems and performance guarantee systems to support the agri business sector throughout Central and Eastern Europe and CIS (Commonwealth of independent states). To make this facility a success, EBRD worked extensively with the Government of Romania to amend the existing warehouse receipt law. The Angolan Government and companies are trying to strengthen the system of commodity finance. Hence, experiences of different countries in the
world show that this system is likely to stay and work.

A note by UNCTAD Secretariat in 2010 states that more than 50 developing and least developed countries (LDCs) depend on three or fewer commodities for at least half of their export earnings. As this commodity trade is highly credit dependent, inadequate access to finance has usually constrained the development of the sector in many developing countries, particularly the least developed, which tend to have more limited access to credit and often face more onerous conditions.

Commodity financing is financing against pledge of warehouse receipts of Central Warehousing Corporation (CWC) / State Warehousing Corporation (SWC) and financing against pledge of warehouse receipts / storage receipts of private warehouses / cold storages / godowns. In case of agricultural commodities, at the time of harvesting, farmers usually sell a substantial quantity of produce at lower prices or resort to distress sales throughout the world. In India, farmers, especially small and medium farmers, are engaged in distress sales to repay loans taken from money lenders from time to time (Adhikary, 2009). For instance, farmers in North-Karnataka have resorted to distress sales of cattle as they were unable to feed them; absence of cold storage and lack of government patronization has forced farmers producing cauliflower and cabbage in Keonjhar district to go for distress sales of vegetables; potato farmers in West Bengal and Punjab, Jaipur rice farmers and Orissa cotton farmers resorted to distress sales of their produce (Pattanayak, 2012; Karchalli and Naik, 2012; Ghosal, 2011 and NDTV, 2002). Farmers across the world resort to such measures in the absence of structured finance especially in developing countries. Farmers, who cultivate crops by taking loans, are especially vulnerable. However, price tends to rise as the season progresses. If farmers keep their goods in warehouses and use them as collateral to avail of credit facility, they would be better placed to meet their immediate credit requirements and take advantage of the benefits of higher price. Lenders can mitigate credit risk by using the stored commodity as collateral. This form of collateral (crop) is more readily available from rural producers and may be less difficult to liquidate than most assets traditionally accepted as collateral. The Warehouse Receipts system will also make it less necessary for lenders to monitor a large number of small borrowers as a few warehouse operators assure loan performance. This will reduce monitoring costs and encourage commercial lending to the rural sector, helping to capitalise the rural trade. A lender holding a Warehouse Receipt has a claim against the issuer (the warehouse company) as well as the borrower in the event of the non-existence or unauthorised release of the collateral. The risk of loss of value of the collateral can be reduced by monitoring movements in its market value as well as by margining and the use of price risk management instruments (Lacroix and Varangis, 1996; Bass and Henderson, 2000).

**Commodity Financing in India**

Lack of access to credit is a severe constraint for many farmers. A standard warehouse receipt is typically used only by traders in market places (mandis) and affluent farmers as a tool for financing (Jindal, 2010). Warehouse receipt finance has thus become an exclusive product that is perceived to be non applicable to the small and marginal farmer. The same was experienced in Zambia and Ghana (Onumah, 2003; Mor and Fernandes, 2009). The
apparent barriers to the farmer in participating in such a product are observed as non availability of reliable price information leading to information asymmetry, lack of storage space (curtailing the holding capacity of the small farmer), no fixed parameters of judging quality, multiple layers of intermediaries, hidden charges, documentation challenges, high transport cost, etc. Warehouse receipts are an important and effective tool for creating liquidity and easing access to agriculture credit. Such schemes also offer additional benefits such as providing storage to smoothen the supply and prices in the market, improving grower incomes, and reducing food losses (Giovannucci et al 2000). If agriculture is to contribute to the development of the economy, and farmers are not to be left behind, then agriculture needs a proper credit system. According to a Report of Expert group on agricultural indebtedness by Banking Division, Department of Economic Affairs, Ministry of Finance, Government of India in 2007, innovative alternatives are needed to provide them with better institutional credit support. Post-harvest credit, in the form of warehouse receipt finance, has proven to be a critical component for agricultural sector growth in emerging economies. It would allow farmers to place their material in warehouses and raise finances as they are tradable instruments, would increase liquidity, allow participants to hold material, not indulge in distress sales, facilitate integration with future market exchanges and reduce dependence on local markets (Hollinger and Rutten, 2009).

The Forward Markets Commission, Government of India and the World Bank instituted a consultancy assignment on Warehouse Receipts in the year 2000. The consultant concluded that there is scope for massive expansion in the use of Warehouse Receipts due to several advantages. The institution of an electronic warehouse receipt system with a central registry was recommended to enable small farmers to access finance against their commodities (up to 75% of the value of produce) at competitive rates using a process that is fairly simple to execute.

In order to address many of these issues, IFMR Trust (Institute of Financial Management and Research Trust) has entered into a collaboration with National Spot Exchange Limited (NSEL) in line with which ITGC (Information Technology General Controls) has structured a warehouse receipt finance product to leverage the warehouse receipt as a liquidity smoothing financial instrument, by riding on a warehouse linked electronic market. With the combination of ITGC warehouse receipt finance and NSEL’s warehousing and electronic price discovery, many of the issues faced by the small and marginal farmers would be resolved. It is felt that these would still not be sufficient to clinch the issue and catalyze the farmer to move out of the traditional mandi system into a contemporary electronic mandi. The alliance will create a seamless process for providing finance to farmers and traders against commodity warehouse receipts for the commodities deposited in NSEL approved warehouses. The pilot for this financing model is to be launched shortly at Kadi, Gujarat. Under the partnership, IFMR Trust will provide loans to farmers against agricultural commodities deposited in NSEL approved warehouses, by way of warehouse receipts issued for these deposits. Such post-harvest financing will give farmers the option to wait out the usually low prices offered immediately after harvest, and sell at a later time, when prices tend to rise. It will also allow farmers to take advantage of changing market prices rather than being burdened by them. The loans backed by
Warehouse receipts will be pooled and repackaged into securities. ITGC will structure, arrange and sell these commodity loan-backed securities in the capital market.

Outside of the ports, the Central and State Governments dominate the warehousing industry, both as client and as service provider. Government warehouses can be used to further the employment of warehouse receipts. Government warehouses are present across the country. They have developed homogeneous storage and quality practices, and their warehouse receipts are accepted by banks. Warehousing facilities owned by the central and the state governments account for about 66 million tons of warehousing capacity. About 46 million tons of capacity is owned or leased by the Food Corporation of India and the State Food and Civil Supplies Corporations. The storage capacity that can be made available by state-owned warehousing corporations is about 20 million tons.

According to the report of the Planning Commission in 2011, the Government of India has introduced a negotiable warehouse receipt system in the country. The Warehousing (Development and Regulation) Act, 2007 had been made effective from 25th October, 2010. As provided in the Act, the Warehousing Development and Regulatory Authority has been set up by the Government from 26th October, 2010. With a view to reduce storage and transit losses (about 6.0% to 10% of total production) of food grains at the farm and commercial level, the Government of India had approved a National Policy on Handling, Storage and Transportation in June, 2000. Under the policy, integrated bulk grain handling, storage and transportation facilities to the tune of 5.5 lakh MTs had been created through private sector participation on Build-Own-Operate (BOO) basis. The Centre has set up a “Grameen Bhandaran Yojana” program for construction of rural godowns by entrepreneurs. These are located near farm lands. These warehouses have defined guidelines, which makes them eligible for pledge finance, provided that the material quality is certified.

The Working Group on warehousing studied the various initiatives taken for the development of the warehousing sector. These include the Private Entrepreneurs Godown (PEG), 2008 Scheme. The Government had formulated this scheme for creation of additional storage capacity for food grains through private sector participation in 2008. Under the scheme, there is a proposal for creation of 15.29 million MTs storage capacity in 19 States through private sector participation and CWC/SWCs. The Working Group observed that the Government of India should formulate a comprehensive Post Harvest Scheme for the farmers at the national level.

India should use warehouse receipts to make it more attractive for banks to lend to the agricultural sector, to reduce the cost of public support for agricultural marketing, to reduce transaction costs and to improve price-risk management. Commercial banks normally honour receipts made by CWC or SWC. Private receipts (as in case of rural private godowns) are not sufficient collaterals, unless a credible accreditation process is put in place. In the absence of quality certification of material, banks can and do provide "lock and key" financing, wherein the material remains in the bank’s possession. However, this can be used by large farmers only since a typical godown will have a capacity of 100-150 tons.
In MP and Karnataka, the states have made certain reforms under which private warehouses are licensed to issue warehouse receipts. Thus rural godowns are beneficial for producers, though it is still early days and the penetration is not large. The licensing authority is SWC and for other states to implement this, they also need to take similar regulatory measures. Random regular checks (audits) are conducted by SWC in MP on rural godowns licensed to issue WR receipts. There are guidelines on storage and fumigation.

At the state level, there are similar warehousing acts, which need to be amended to allow SWC to play the same role. The commodity business accounts for between 35%-40% of our GDP (Anonymous, 2004). In 2001-02, the volume of trade was just Rs 35,000 crore; it was around Rs 100,000 crore in 2002-03. Loans against commodities were just Rs 23,240 crore in 2001-02 which accounted for less than 2% of total credit. The reason for this could be that ‘futures trading’ was not allowed in most commodities and to the extent that it existed, the exchanges were localised with little banking interest. This explains why commodity finance was higher in case of banks like State Bank of Indore, State Bank of Saurashtra, Punjab National Bank, Oriental Bank of Commerce, UCO Bank and Indian Overseas Bank among others where they tended to have strong ‘regional’ presence. Further, such finance came from local money lenders who were not answerable to the system. Recently commodity trading through future contracting has been beneficial for the Indian economy in a number of ways. Commodity trading in the futures market comes in handy to minimize the risks arising out of fluctuations in demand and supply conditions. It also helps to preserve the benefits derived from profitable economic activities.

However, with the springing up of new multi-commodity exchanges in the country, lending perception has changed and now commodity finance is no longer a risky venture. It will directly help the farmers by providing additional cover and once we have the banking sector taking informed business decisions in this area, the government could gradually withdraw subsidies for agriculture, as farmers can hedge against bad harvests on the exchange with banks providing necessary finance. Commodity finance is becoming popular all over India; states like Punjab, Haryana and Uttar Pradesh are pioneers in commodity finance where wheat, paddy and cotton are grown in large amounts. In Punjab where wheat, rice and cotton are the major crops grown, banks have started providing finance on these crops.

**Scenario of commodity finance in Punjab**

The government had decided to promote the Warehousing (Development and Regulation) Act, 2007, which entails that farmers can store their grains in central and state warehouses. The warehouse receipts, which mention the quantity, quality and cost of food grains, can then be used as negotiable instruments to avail bank loans. When wheat prices soar in October, the farmers can later sell their produce, stocked safely in the warehouses. Official sources said they were planning to create awareness about the Act by holding farmers’ meetings, so they could get better prices for their produce (Khanna, 2008). Over the past three years, it has been observed that the prices of wheat shoot up by 10- 15% before the onset of winters. Generally, farmers hold back their stocks and store food grains on their premises, to sell these at remunerative prices later. Under this scheme, the farmer can get some loan at the time of harvest, which will see him through till he decides to sell his produce.
Though the Act has been in place for a long time, it has had few takers in Punjab. In the past, as the price of wheat remained almost stable throughout the year, farmers in Punjab preferred to sell their produce after harvest, and have not been availing themselves of the benefits of this scheme. The Act was amended last year to allow for warehouse receipts to be granted the status of a fully negotiable instrument and increase liquidity in rural areas. This means that a farmer can sell his warehouse receipt to a private party as and when required. A farmer can get around 70-75% of the crop value as loan from the bank. With the new amendments, no bank can refuse to grant loans on the warehouse receipts. Another benefit of the scheme is that food grains are stored in a scientific manner in the 27 central warehouses and 114 state warehouses and are also insured against calamities. In Ludhiana, rice and wheat are grown, Bathinda is a cotton belt and Amritsar is a paddy belt. The takers of commodity finance are the farmers and industries like rice mills, cotton factories, spinning units, etc.

Hence, a holistic approach towards commodity finance will bring out the total benefits of commodity finance. The stakeholders like the government, warehouses, banks, traders and private companies need to be strengthened by way of strong policy reforms and financial support so that the agri business chain is strengthened and it withstands the external and internal shocks.

With this background, the study of attitude and perception of farmers and industries towards commodity finance by banks in Bathinda and Amritsar belts was envisaged with the following specific objectives:

**To study perception and attitude of farmers and agri firms of Punjab towards commodity finance.**

### Research Methodology

Commodity finance is a new concept in India. It provides credit to farmers and industries, hedges against risk, provides security, and increases the investment which will also lead to overall economic growth. Punjab being a major producer of food grains like wheat, rice and cash crops like cotton, the concept of commodity financing is catching up fast. Banks which are looking for new avenues to extend credit have started tapping agricultural commodities as a base for extending credit. Commodity finance in Punjab is done for wheat, rice and cotton in some areas like Ludhiana, Bathinda and Amritsar. Hence, the present study was conceptualized and conducted in 2010 (January-May) with the idea of understanding the perception, attitude and problems faced by farmers and agri firms towards commodity finance.

An exploratory type of research design is followed to carry out the research. The population of the study consists of all the farmers and agri firms of Punjab who are availing the facility of commodity finance from financial institutions. A list of farmers and agri firms availing commodity finance in Amritsar located in northern Punjab and Bathinda located in Southern Punjab was obtained from financial institutions providing commodity finance to them. Out of this list, 50 farmers and 30 agri firms availing commodity finance were chosen on the basis of random sampling technique from Bathinda and Amritsar. Data was collected through two non disguised structured questionnaires, one for farmers and the other for industries. Data was collected from farmers on behaviour, knowledge and amount of finance on commodity taken, etc. to understand the perception and attitude of farmers towards commodity finance and from owners/senior managers of agri firms on duration,
knowledge and amount of finance taken to understand the perception and attitude of agri firms towards commodity finance. Responses were obtained on a 5 point Likert Scale ranging from very important to not important and from strongly agree to strongly disagree.

After collection of data, master tables were constructed and analysis of the collected data was done by constructing various tables and applying suitable statistical tools like percentage, mean scores and Z test.

Frequencies were multiplied with their respective weights and aggregate values found out. Weighted average or mean scores were found out using the formula:

\[
\text{Mean score} = \frac{\sum S_n \times F_n}{N}
\]

Where,

\(S_n = \text{Score}\)
\(F_n = \text{Frequency}\)
\(N = \text{Sample size}\)

**Z-test**

Other statistical tools used for analysis included z-test that helped in checking the significance of the mean of the sample chosen. The formula used was:

\[
Z = \frac{(\bar{X} - \mu)}{\text{S.E.}}
\]

\[
\text{S.E.} = \frac{S}{\sqrt{n}}
\]

- \(\bar{X} = \text{mean of the sample}\)
- \(\mu = \text{mean of the population}\)
- \(n = \text{sample size}\)
- \(S = \text{standard deviation of the sample}\)


If the calculated value of \(z\) exceeds the table value at 5\% level of significance, we say the difference between \(X\) and \(\mu\) is significant.

**Two mean Z-test**

Double mean z-test was used to find if there were significant differences in the mean values of two samples of farmers and agri firms on various considerations. The formula used was:

\[
Z = \frac{(\bar{X}_1 - \bar{X}_2)}{\text{S.E.}}
\]

\[
\text{S.E.} = \sqrt{\left(\frac{S_1^2}{n_1} + \frac{S_2^2}{n_2}\right)}
\]

- \(\bar{X}_1 = \text{mean of first sample}\)
- \(\bar{X}_2 = \text{mean of second sample}\)
- \(S_1 = \text{standard deviation of first sample}\)
- \(S_2 = \text{standard deviation of second sample}\)
- \(n_1 = \text{sample size of first sample}\)
- \(n_2 = \text{sample size of second sample}\)

The calculated value of \(z\) exceeded the table value at 5\% level of significance, we say the difference between samples is significant.

**Findings**

Perception and attitude of farmers and agri firms towards commodity finance has been analysed and compared in this section.

**Profile of the farmers**

Profiling of the farmers according to their age, education level, land holding, and annual income has been done. Analysis of Table 1 clearly indicates that majority of the respondents i.e. 34\% are in the age group of 28-37, 24\% are in the age group of 18-27 and 22\% are in the age group of 38-47. It is clear that 80\% of the respondents are below 47 years of age. In terms of education, majority of the respondents i.e. 44\% are 10+2, 28\% are graduates...
and 12% have done certificate courses. None of the respondents were post graduates. 32% of the respondents have less than 10 acres, 24% have 20 to 30 acres, 22% have 10 to 20 acres, 16% have 30 to 40 acres and 6% have more than 40 acres of land. Analysis indicates that commodity finance is availed by large farmers and it has not percolated to small farmers to a greater extent. Majority of the farmers i.e. 46% have income less than 5 lakhs and 34% have between 5 to 10 lakhs. It is seen that 80% of the farmers have income less than 10 lakhs.

Table 1: Profile of the respondents (N = 50)

<table>
<thead>
<tr>
<th>Age groups</th>
<th>No. of respondents</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-27</td>
<td>12</td>
<td>24</td>
</tr>
<tr>
<td>28-37</td>
<td>17</td>
<td>34</td>
</tr>
<tr>
<td>38-47</td>
<td>11</td>
<td>22</td>
</tr>
<tr>
<td>48-57</td>
<td>6</td>
<td>12</td>
</tr>
<tr>
<td>58 years and above</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>50</strong></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Educational level of the farmer</th>
<th>No. of respondents</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Below matric</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>Matric</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>10+2</td>
<td>22</td>
<td>44</td>
</tr>
<tr>
<td>Graduation</td>
<td>14</td>
<td>28</td>
</tr>
<tr>
<td>Professional/certificate/degree</td>
<td>6</td>
<td>12</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>50</strong></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Land holding</th>
<th>No. of respondents</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 – 10 acres</td>
<td>16</td>
<td>32</td>
</tr>
<tr>
<td>10 – 20 acres</td>
<td>11</td>
<td>22</td>
</tr>
<tr>
<td>20 – 30 acres</td>
<td>12</td>
<td>24</td>
</tr>
<tr>
<td>30 – 40 acres</td>
<td>8</td>
<td>16</td>
</tr>
<tr>
<td>More than 40 acres</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>50</strong></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Annual income</th>
<th>No. of respondents</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 5 lakhs</td>
<td>23</td>
<td>46</td>
</tr>
<tr>
<td>5 – 10 lakhs</td>
<td>17</td>
<td>34</td>
</tr>
<tr>
<td>10 – 15 lakhs</td>
<td>8</td>
<td>16</td>
</tr>
<tr>
<td>15 – 20 lakhs</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>50</strong></td>
<td></td>
</tr>
</tbody>
</table>

Field Survey (January- May, 2010)
Annual income v/s land holding

A comparison of the annual income and land holding of the farmers is given in Table 2.

Table 2: Annual income v/s land holding (N = 50)

<table>
<thead>
<tr>
<th>Annual Income</th>
<th>Land Holding</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0 – 10 acres</td>
</tr>
<tr>
<td>Less than 5 lakhs</td>
<td>16</td>
</tr>
<tr>
<td>5 – 10 lakhs</td>
<td>4</td>
</tr>
<tr>
<td>10 – 15 lakhs</td>
<td>7</td>
</tr>
<tr>
<td>15 – 20 lakhs</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>32</td>
</tr>
</tbody>
</table>

Source: Same as Table 1

From Table 2, it is clear that 80% of the respondents have income less than 10 lakhs and their land holding is less than 30 acres.

Profile of agri firms

Profile of agri firms according to their current annual turnover, type of the enterprise, investment in plant and machinery and number of employees in the enterprise are enumerated in Table 3.

Table 3: Profile of agri firms (N = 30)

<table>
<thead>
<tr>
<th>Current annual turnover of the enterprise</th>
<th>No. of respondents</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-5 crores</td>
<td>15</td>
<td>50</td>
</tr>
<tr>
<td>5-10 crores</td>
<td>6</td>
<td>20</td>
</tr>
<tr>
<td>10-15 crores</td>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td>Above 15 crores</td>
<td>6</td>
<td>20</td>
</tr>
<tr>
<td>Total</td>
<td>30</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Nature of enterprise</th>
<th>No. of respondents</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sole proprietorship</td>
<td>6</td>
<td>20</td>
</tr>
<tr>
<td>Partnership</td>
<td>13</td>
<td>43.33</td>
</tr>
<tr>
<td>Private limited company</td>
<td>10</td>
<td>33.33</td>
</tr>
<tr>
<td>Public limited company</td>
<td>1</td>
<td>3.3</td>
</tr>
<tr>
<td>Total</td>
<td>30</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Investment in plant and machinery</th>
<th>No. of respondents</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-1 crore</td>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td>1-5 crores</td>
<td>14</td>
<td>46.67</td>
</tr>
<tr>
<td>5-10 crores</td>
<td>6</td>
<td>20</td>
</tr>
<tr>
<td>10-15 crores</td>
<td>1</td>
<td>3.3</td>
</tr>
<tr>
<td>Above 15 crores</td>
<td>6</td>
<td>20</td>
</tr>
<tr>
<td>Total</td>
<td>30</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>No. of employees in the enterprise</th>
<th>No. of respondents</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-25</td>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td>26-50</td>
<td>2</td>
<td>6.67</td>
</tr>
<tr>
<td>51-75</td>
<td>5</td>
<td>16.67</td>
</tr>
<tr>
<td>76-100</td>
<td>5</td>
<td>16.67</td>
</tr>
<tr>
<td>101-above</td>
<td>15</td>
<td>50</td>
</tr>
<tr>
<td>Total</td>
<td>30</td>
<td></td>
</tr>
</tbody>
</table>

Source: Same as Table 1
From Table 3, it is clear that majority of agri firms i.e. 50% have annual turnover ranging between 1-5 crores, 20% have annual turnover above 15 crores, 20% have 5-10 crores and 10% have 10-15 crores. Majority of agri firms which were contacted are partnership firms (43.33%), 33.33% are Private Ltd., 20% are Sole Proprietorship firms, and only one of the respondents was a Public Ltd. company. Investment in plant and machinery of 46.67% firms is between 1-5 crores, 20% have invested above 15 crores, 20% have invested between 5-10 crores, 10% have invested 0 – 1 crore, and 3.3% have investments between 10-15 crores. 50% of the firms have more than 101 employees, 16.67% have 76-100 and 16.67% have 51-75 employees.

**Familiarity with commodity finance**
To check the familiarity of the respondents with commodity finance, they were asked what they understood from these words. 100% of the farmers and agri firms were aware of commodity finance and said that it is a type of loan. 56% farmers said they used commodity finance on a regular basis, and 44% said they used it only sometimes. Awareness of commodity finance among the sample was high as the sample consisted of only those farmers and agri firms who availed the facility of commodity finance either regularly or irregularly.

**Type of crop grown by farmers and stored by agri firms**
Respondents were asked about the type of crop they grow and store all year round.

### Table 4: Type of crop grown (N = 50)

<table>
<thead>
<tr>
<th>Type of crop</th>
<th>No. of respondents</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cotton</td>
<td>25</td>
<td>25</td>
</tr>
<tr>
<td>Wheat</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>Rice</td>
<td>25</td>
<td>25</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100</strong></td>
<td></td>
</tr>
</tbody>
</table>

*Multiple Response (Source: Same as Table 1)

From Table 4, it is clear that majority of farmers i.e. 50% grow wheat, and 25% grow cotton and rice in rotation with wheat which they keep in the warehouses for financing. Agri firms were asked about the type of crop stored by them, and it was found that 50% store rice and 50% store cotton. This is because 15 respondents were taken from Amritsar which is a rice growing area and 15 respondents were taken from Bathinda where the major crop is cotton.

**Source of finance for farmers and agri firms**
The response of the farmers about their sources of finance is as follows:

### Table 5: Source of finance (N = 50)

<table>
<thead>
<tr>
<th>Source of finance</th>
<th>No. of respondents</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Borrow from middlemen</td>
<td>26</td>
<td>34.21</td>
</tr>
<tr>
<td>Finance from banks</td>
<td>50</td>
<td>65.79</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>76</strong></td>
<td></td>
</tr>
</tbody>
</table>

*Multiple Response (Source: Same as Table 1)
Table 5 shows that majority of farmers i.e. 65.79% arrange their money from banks, and 34.21% obtained finance from arhtiyas / middlemen. Banks are now being visualized by the farmers as an alternative for obtaining finances. A clear shift from arhtiyas (middlemen) to banks was noticed for financing purpose. All the agri firms approach banks for their financing needs.

**Quantity financed through commodity finance by farmers**

Respondents were asked about the percentage of total quantity of produce against which commodity finance is taken from banks.

<table>
<thead>
<tr>
<th>Quantity financed through commodity finance (in percentage)</th>
<th>No.</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 – 30</td>
<td>19</td>
<td>38</td>
</tr>
<tr>
<td>30 – 40</td>
<td>12</td>
<td>24</td>
</tr>
<tr>
<td>40 – 50</td>
<td>9</td>
<td>18</td>
</tr>
<tr>
<td>More than 50</td>
<td>10</td>
<td>20</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>50</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Source: Same as Table 1

From Table 6, it is clear that majority of the farmers i.e. 38% get 20 – 30 % of the produce financed, 24% get 30 – 40%, 20% get more than 50% and 18% get 40 – 50% of their produce financed through commodity finance. 62% of the farmers get less than 40% produce financed. Agri firms (100%) get more than 50% of their commodity financed from banks.

**Financing obtained through commodity finance by farmers**

Out of the total value of commodity stored in the warehouse by the customer, banks provide 75% finance. So the respondents were asked about the value of the commodity stored in warehouses each year by the farmers and it was found that majority of farmers i.e. 70% stored commodities worth less than 5 lakhs and 30% stored commodities worth 5 – 10 lakhs. They were also asked about the amount they borrow on a per annum basis and it was found that 82% borrow less than Rs 5 lakhs, and 18% borrow between Rs 5 – 10 lakhs on a per annum basis.

Agri firms were asked about the investments they make in storing commodity and the amount they borrow on a per annum basis.
Table 7: Investment made in storing crop and amount borrowed on an annual basis by agri firms (N = 30)

<table>
<thead>
<tr>
<th>Investment made in storing crop</th>
<th>No. of respondents</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 1 crore</td>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td>1 – 5 crore</td>
<td>15</td>
<td>50</td>
</tr>
<tr>
<td>5 – 10 crore</td>
<td>9</td>
<td>30</td>
</tr>
<tr>
<td>More than 10 crore</td>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td>Total</td>
<td>30</td>
<td>100</td>
</tr>
<tr>
<td>Financing obtained annually</td>
<td>No. of respondents</td>
<td>Percentage</td>
</tr>
<tr>
<td>Less than 1 crore</td>
<td>5</td>
<td>16.67</td>
</tr>
<tr>
<td>1 – 5 crore</td>
<td>15</td>
<td>50</td>
</tr>
<tr>
<td>5 – 10 crore</td>
<td>8</td>
<td>26.67</td>
</tr>
<tr>
<td>More than 10 crore</td>
<td>2</td>
<td>6.67</td>
</tr>
<tr>
<td>Total</td>
<td>30</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: Same as Table 1

From Table 7, it is clear that majority of agri firms i.e. 50% invest 1 – 5 crores, 30% invest 5 – 10 crores, 10% invest less than 1 crore and 10% invest more than 10 crores in crop storage. Majority of the respondents i.e. 50% borrow 1 – 5 crores, 26.67% borrow 5 – 10 crores, 16.67% borrow less than 1 crore, and 6.67% borrow more than 10 crores.

Duration of finance

Commodity financing is done for 1 year as it is a short term loan. The respondents (farmers and agri firms) were asked about the duration within which they repay their loan taken from the bank.

Table 8: Duration of finance

<table>
<thead>
<tr>
<th>Duration of finance (in months)</th>
<th>No. of farmers (N = 50)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 – 6</td>
<td>11</td>
<td>22</td>
</tr>
<tr>
<td>7 – 8</td>
<td>19</td>
<td>38</td>
</tr>
<tr>
<td>9 – 10</td>
<td>10</td>
<td>20</td>
</tr>
<tr>
<td>10 – 11</td>
<td>6</td>
<td>12</td>
</tr>
<tr>
<td>11 – 12</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>Total</td>
<td>50</td>
<td>100</td>
</tr>
<tr>
<td>Duration of finance (in months)</td>
<td>No. of agrifirms (N = 30)</td>
<td>Percentage</td>
</tr>
<tr>
<td>3 – 4</td>
<td>4</td>
<td>13.33</td>
</tr>
<tr>
<td>5 – 6</td>
<td>10</td>
<td>33.33</td>
</tr>
<tr>
<td>7 – 8</td>
<td>6</td>
<td>20</td>
</tr>
<tr>
<td>9 – 10</td>
<td>5</td>
<td>16.66</td>
</tr>
<tr>
<td>10 – 11</td>
<td>5</td>
<td>16.66</td>
</tr>
<tr>
<td>Total</td>
<td>30</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: Same as Table 1
From Table 8, it is clear that majority of the farmers i.e. 38% repay their loan within 7-8 months, 22% repay within 5-6 months, 20% repay within 9-10 months, 12% repay within 10-11 months, and 8% repay within 11-12 months. 80% of the farmers avail finance for less than 10 months and repay within the stipulated time. Majority of the agri firms i.e. 33.33% repay their loan within 5-6 months, 20% repay within 7-8 months, 16.66% repay within 9-10 months and 11-12 months, and 13.33% repay within 13-14 months.

**Collateral offered for finance**

The respondents were further asked about the collateral they offer for finance as commodity finance is secured by collateral and it was found that 100% of the respondents offer the warehouse receipt as collateral for commodity finance.

**Rate of interest charged**

Respondents were asked about the rate of interest charged to them by the banks.

<table>
<thead>
<tr>
<th>Rate of interest (in percentage)</th>
<th>No. of farmers (N = 50)</th>
<th>Percentage</th>
<th>No. of Agri firms</th>
<th>Percentage (N = 30)</th>
</tr>
</thead>
<tbody>
<tr>
<td>11 – 12</td>
<td>4</td>
<td>8</td>
<td>9</td>
<td>30</td>
</tr>
<tr>
<td>12 – 13</td>
<td>41</td>
<td>82</td>
<td>16</td>
<td>53.33</td>
</tr>
<tr>
<td>13 – 14</td>
<td>5</td>
<td>10</td>
<td>5</td>
<td>16.66</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>50</strong></td>
<td><strong>100</strong></td>
<td><strong>30</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Source: Same as Table 1

From Table 9, it is clear that majority of farmers i.e. 82% are charged 12 – 13% rate of interest, 10% are charged 13 – 14%, and 8% are charged 11 – 12% by banks. Majority of agri firms i.e. 53.33% are charged 12 – 13%, 30% are charged 11 – 12%, and 16.67% are charged 13 – 14%. Almost 83% respondents pay less than 13% interest.

**Source of information about commodity finance**

Respondents were asked about their source of information of commodity finance and it was found that majority of respondents i.e. 72% are approached by the bank official and 28% get to know about commodity finance from friends/relatives/associates. All the agri firms were approached by the bank official who made them aware about commodity finance.

**Category to which farmers belong**

Respondents were asked about their category under which they take commodity finance.
Table 10: Category of farmer for commodity finance (N = 50)

<table>
<thead>
<tr>
<th>Category of farmer for commodity finance</th>
<th>No.</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual farmer</td>
<td>30</td>
<td>60</td>
</tr>
<tr>
<td>Joint liability group</td>
<td>12</td>
<td>24</td>
</tr>
<tr>
<td>Commission agent</td>
<td>8</td>
<td>16</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>50</td>
<td></td>
</tr>
</tbody>
</table>

Source: Same as Table 1

From Table 8, it is clear that majority of the farmers i.e. 60% avail finance as individual farmers, 24% avail finance under joint liability groups and 16% farmers are commission agents also.

**Regularity of payment of loan**

Farmers were asked if the bank issued the loan once, in instalments, or as per convenience of the customer. According to 66% farmers, banks issued the loan once and 34% said that banks issued the loan as per convenience of the customer. Majority of the agri firms i.e. 86.67% said that banks issue loan as per convenience of the customer, and 13.33% said that banks issue loan once.

**Time taken to issue the loan**

Respondents were asked about the time taken by the bank to issue the loan.

Table 11: Time taken to issue the loan

<table>
<thead>
<tr>
<th>Time taken (in weeks)</th>
<th>No. of farmers (N = 50)</th>
<th>Percentage</th>
<th>No. of Agri firms (N = 30)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 2</td>
<td>28</td>
<td>56</td>
<td>21</td>
<td>70</td>
</tr>
<tr>
<td>2 to 3</td>
<td>15</td>
<td>30</td>
<td>9</td>
<td>30</td>
</tr>
<tr>
<td>3 to 4</td>
<td>7</td>
<td>14</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>50</td>
<td></td>
<td>30</td>
<td></td>
</tr>
</tbody>
</table>

Source: Same as Table 1

Table 11 shows that majority of farmers i.e. 56% said that banks issued the loan in less than 2 weeks, 30% said banks issued the loan in 2 to 3 weeks, and 14% said that banks issued loan in 3 to 4 weeks. Middlemen also take around 5 to 10 days for providing finance to farmers. So commodity finance is a fast means of finance provided by banks as 86% respondents said banks take less than 3 weeks to issue the loan. Majority of the agri firms i.e. 70% said that banks take less than 2 weeks to issue the loan and 30% said that banks take 2 to 3 weeks.

**Follow up by bank**

Farmers and agri firms were asked about the follow up taken up by bank for repayment of loan.
Table 10: Follow up by bank (N = 50)

<table>
<thead>
<tr>
<th>Follow up by bank</th>
<th>No. of Farmers N=50</th>
<th>Percentage</th>
<th>No. of Agri firms N=30</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>After the completion of the loan tenure</td>
<td>9</td>
<td>18</td>
<td>6</td>
<td>20</td>
</tr>
<tr>
<td>Periodically after every week/month</td>
<td>28</td>
<td>56</td>
<td>16</td>
<td>53.33</td>
</tr>
<tr>
<td>Depends upon the type of customer dealing with the bank</td>
<td>13</td>
<td>26</td>
<td>8</td>
<td>26.67</td>
</tr>
<tr>
<td>Total</td>
<td>50</td>
<td>100</td>
<td>30</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: Same as Table 1

It was found in Table 10 that banks follow up the loan periodically (56%). Sometimes follow up depended upon the customer dealing with the bank (26%) and sometimes the bank followed up after the completion of the loan tenure (18%). Majority of the agri firms i.e. 53.33% said that the bank followed up periodically, 26.67% said it depends upon the type of customer dealing with the bank, and 20% said the bank follows up after the completion of loan tenure.

Considerations for arranging finances by farmers and agri firms

A comparison of the responses of farmers and agri firms was made to understand the considerations for arranging finances by farmers and agri firms. Various considerations are rated on a 5-point Likert scale. Mean values, standard deviation and z-value at 5% level of significance were calculated.

Table 11: Considerations for arranging for finances by farmers and agri firms

<table>
<thead>
<tr>
<th>Consideration for arranging finances</th>
<th>Mean Score</th>
<th>Standard Deviation</th>
<th>Z-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Farmers N = 30</td>
<td>Agri firms N = 50</td>
<td>Farmers</td>
</tr>
<tr>
<td>Safety from price fluctuation</td>
<td>4.54</td>
<td>3.03</td>
<td>0.58</td>
</tr>
<tr>
<td>Protection from malpractices of market selling at low prices</td>
<td>4.28</td>
<td>3.23</td>
<td>0.70</td>
</tr>
<tr>
<td>Lower transaction costs</td>
<td>3.94</td>
<td>3.6</td>
<td>0.71</td>
</tr>
<tr>
<td>Easy money</td>
<td>4.24</td>
<td>4.17</td>
<td>0.77</td>
</tr>
<tr>
<td>Bank pvt/public</td>
<td>3.52</td>
<td>3.4</td>
<td>0.86</td>
</tr>
<tr>
<td>Risk reduction</td>
<td>4.02</td>
<td>4.1</td>
<td>0.71</td>
</tr>
<tr>
<td>Rate of interest</td>
<td>4.76</td>
<td>4.87</td>
<td>0.43</td>
</tr>
<tr>
<td>Increase profits</td>
<td>4.70</td>
<td>4.83</td>
<td>0.46</td>
</tr>
<tr>
<td>Liquidity</td>
<td>3.86</td>
<td>4.6</td>
<td>0.57</td>
</tr>
</tbody>
</table>

*Significant at 5% level of significance (z-value from table = 1.96) (Source: Same as Table 1)
From Table 11, it is clear that for farmers, the rate of interest (4.76) and increase in profits (4.70) are the major considerations while arranging finances followed by the safety from price fluctuations (4.54), lower post harvest losses due to storage (4.52) and protection from malpractices of market selling at low prices (4.28). Easy money (4.24), liquidity (3.86), risk reduction (4.02) and lower transaction costs (3.94) came next. All the factors were found to be significant at 5% level of significance.

For agri firms, the rate of interest (4.87) and the increase in profits (4.83) are the major considerations, then comes the liquidity (4.60) followed by risk reduction (4.10) and lower transaction costs (3.60). It is also seen that price fluctuation is least important as the commodity is available in season in bulk and agri firms buy them in the season. Also the protection from malpractices of market selling at low prices, easy money and type of bank i.e. private or public are not very important considerations for the agri firms. Factors like rate of interest, increase in profits, liquidity, risk reduction, and lower transaction costs were found to be significant at 5% level of significance.

The responses of farmers and agri firms about commodity finance were compared and found to be significantly different in their views about safety from price fluctuation, practices from malpractices of market selling at low prices, and lower transaction costs. Farmers and agri firms do not differ significantly on the parameters of easy money, bank pvt/public, risk reduction, rate of interest, higher profits and liquidity.

Comparison of other sources of finance with commodity finance by farmers and agri firms
In this part, respondents were asked to compare commodity finance with other sources of finance on a 5-point Likert scale. The mean score and z-value of various considerations were calculated and z-value of two mean scores were calculated at 5% level of significance to compare the responses of farmers and agri firms.

<table>
<thead>
<tr>
<th>Comparison with other sources of finance</th>
<th>Mean Score</th>
<th>Standard Deviation</th>
<th>Z-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Farmers N = 30</td>
<td>Agri firms N = 50</td>
<td>Farmers</td>
</tr>
<tr>
<td>Has more benefits</td>
<td>4.38</td>
<td>4.17</td>
<td>0.67</td>
</tr>
<tr>
<td>Depends upon the availability of the warehouses</td>
<td>4.46</td>
<td>4.3</td>
<td>0.89</td>
</tr>
<tr>
<td>Safe</td>
<td>4.32</td>
<td>4.57</td>
<td>0.68</td>
</tr>
<tr>
<td>Secured by collateral</td>
<td>4.66</td>
<td>4.83</td>
<td>0.48</td>
</tr>
<tr>
<td>Requires less formalities</td>
<td>1.98</td>
<td>2.3</td>
<td>0.59</td>
</tr>
<tr>
<td>Easily available</td>
<td>2.90</td>
<td>3.87</td>
<td>0.84</td>
</tr>
</tbody>
</table>

*Significant at 5% level of significance (z-value from table = 1.96) (Source: Same as Table 1)
Table 12 shows that farmers felt that commodity finance is secured by collateral as compared to other sources of finance (4.66). Commodity finance is safe as compared to other means of finance. Commodity finance has more benefits (4.38), is safer (4.32), but is not easily available (2.90) and it depends on the availability of the warehouse (4.46). Commodity financing did not require a large number of formalities (1.98). All the factors except easy availability were found to be significant at 5% level of significance.

Agri firms also felt that commodity finance is secured by collateral (4.83) as compared to the other sources of finance. Commodity finance is safer as compared to other means of finance (4.57). Commodity finance has more benefits (4.17), is easily available (3.87) and it depends on the availability of the warehouse (4.30) but compared to other sources of finance, commodity finance requires a large number of formalities (2.30). All the considerations were found to be significant at 5% level of significance.

Farmers and agri firms are significantly different in their views about easy availability of commodity finance. There is no significant difference in the view of farmers and agri firms regarding the remaining parameters.

**Availability of warehouse**

Respondents were asked whether warehouses for availing commodity finance were easily available; it was found that majority of farmers i.e. 70% said that warehouses were not easily available, and 30% said warehouses were easily available. All the agri firms said that warehouses were easily available.

**Satisfaction with commodity finance by farmers and agri firms**

The respondents were asked to rate their satisfaction level on a 5-point Likert scale. The mean score and z-value were calculated at 5% level of significance to compare the responses of farmers and agri firms.

**Table 13: Satisfaction with commodity finance by farmers and agri firms**

<table>
<thead>
<tr>
<th>Satisfaction with commodity finance</th>
<th>Mean Score</th>
<th>Standard Deviation</th>
<th>Z-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Farmers N = 30</td>
<td>Agri firms N = 50</td>
<td>Farmers</td>
</tr>
<tr>
<td>Knowledge and guidance provided by Bank officials</td>
<td>4.10</td>
<td>4.13</td>
<td>0.61</td>
</tr>
<tr>
<td>Dealing by bank officials</td>
<td>4.20</td>
<td>4.3</td>
<td>0.73</td>
</tr>
<tr>
<td>Overall Satisfaction</td>
<td>4.10</td>
<td>4.23</td>
<td>0.76</td>
</tr>
<tr>
<td>Time taken to issue loan</td>
<td>3.80</td>
<td>4.2</td>
<td>0.81</td>
</tr>
<tr>
<td>Easy to understand and complete formalities</td>
<td>3.26</td>
<td>3.97</td>
<td>0.66</td>
</tr>
<tr>
<td>Ease/Clarity of Information</td>
<td>3.36</td>
<td>4.17</td>
<td>0.80</td>
</tr>
</tbody>
</table>

*Significant at 5% level of significance (z-value from table = 1.96) (Source: Same as Table 1)
From Table 13, it is clear that farmers are mostly satisfied by the knowledge and guidance provided by bank officials (4.10) and also satisfied from their dealings with bank officials (4.20). All the factors are found to be significant at 5% level of significance. On the whole, 44% respondents were found to be somewhat satisfied, 40% were very satisfied and 16% were extremely satisfied from the services of the bank.

Agri firms are mostly satisfied from their dealings with bank officials (4.30) and from easy, clear information about commodity finance (4.17). Agri firms feel that the time taken to issue the loan is long (4.20). They also feel that it is easy to understand and complete formalities for commodity finance (3.97). Agri firms are also satisfied with the knowledge and guidance provided by the bank official (4.13). All the factors are found to be significant at 5% level of significance.

Responses of farmers and agri firms are significantly different in their views on time taken to issue loans, easy to understand and complete formalities, and ease/clarity of information provided by the banks.

Importance given to various considerations while availing commodity finance by farmers and agri firms

Table 14: Importance given to various considerations while availing commodity finance by farmers and agri firms

<table>
<thead>
<tr>
<th>Importance of factors for commodity finance</th>
<th>Mean Score</th>
<th>Standard Deviation</th>
<th>Z-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Difficulty in providing collaterals</td>
<td>3.56</td>
<td>1.6</td>
<td>0.70</td>
</tr>
<tr>
<td>Difficulty in providing the required documents</td>
<td>3.36</td>
<td>1.77</td>
<td>0.85</td>
</tr>
<tr>
<td>Insufficient amount of finance is given</td>
<td>3.30</td>
<td>2.33</td>
<td>0.81</td>
</tr>
<tr>
<td>High interest rates of the loans</td>
<td>3.58</td>
<td>2.97</td>
<td>0.93</td>
</tr>
<tr>
<td>Delay in disbursement/sanctioning</td>
<td>2.54</td>
<td>1.93</td>
<td>0.81</td>
</tr>
<tr>
<td>Too many formalities and paperwork involved</td>
<td>4.02</td>
<td>3.57</td>
<td>0.65</td>
</tr>
<tr>
<td>Unwillingness of authorities to sanction loans without approach</td>
<td>1.82</td>
<td>1.6</td>
<td>0.72</td>
</tr>
<tr>
<td>Time to process application is very long</td>
<td>2.50</td>
<td>2.4</td>
<td>0.71</td>
</tr>
<tr>
<td>Unaccounted expenses (bribe) involved in entertaining officials to sanction the loan</td>
<td>1.28</td>
<td>1.23</td>
<td>0.45</td>
</tr>
</tbody>
</table>

*Significant at 5% level of significance (z-value from table = 1.96) (Source: Same as Table 1)
From Table 14, it is clear that respondents feel that financing from banks requires too many formalities and paperwork (4.02). Also they feel that they have difficulty in providing the collaterals (3.56) for commodity finance as the warehouses are not easily available. High rate of interest (3.58), difficulty in providing the required documents (3.36) and insufficient amount of finance (3.30) are other important considerations. Farmers gave little consideration to the delays in disbursement of loans (2.54) due to long processing time (2.50) and unwillingness of bank officials to sanction loans without approach (1.82) and unaccounted expenses like bribe which is involved in getting commodity finance. Analysis indicates that commodity finance is easily available and without much hassles. All the constraints were significant at 5% level of significance.

Agri firms feel that financing from banks requires too many formalities and paperwork (3.57). The rest of the factors were not very important for agri firms. All the constraints were significant at 5% level of significance.

Farmers and agri firms are significantly different in their views about difficulty in providing collaterals, difficulty in providing required documents, insufficient amount of finance, high rate of interest, delay in sanctioning loan, and too many formalities and paperwork involved.

**Recommend to others**

Respondents were asked based on their experience about commodity finance if they will recommend commodity finance to others.

**Table 15: Recommend to others**

<table>
<thead>
<tr>
<th>Recommend to others</th>
<th>No. of Farmers (N=50)</th>
<th>Percentage</th>
<th>No. of Agri firms (N=30)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Definitely recommend</td>
<td>15</td>
<td>30</td>
<td>12</td>
<td>40</td>
</tr>
<tr>
<td>Probably recommend</td>
<td>28</td>
<td>56</td>
<td>13</td>
<td>43.33</td>
</tr>
<tr>
<td>Not sure</td>
<td>7</td>
<td>14</td>
<td>2</td>
<td>6.67</td>
</tr>
<tr>
<td>Probably not recommend</td>
<td></td>
<td></td>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td>Total</td>
<td>50</td>
<td>100</td>
<td>20</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: Same as Table 1

From Table 15, it is clear that majority of farmers i.e. 56% will probably recommend it to others, 30% will definitely recommend, and 14% are not sure. Farmers were further asked whether they would like to move back to old financing methods. More than half i.e. 56% are unlikely to move back to old financing methods whereas 32% are very unlikely, and 12% are somewhat unlikely to move back to old financing methods.

Majority of agri firms i.e. 43.33% will probably recommend commodity finance to others, 40% said they will definitely recommend, 10% said probably they will not recommend, and 6.67% were not sure about whether they will recommend or not. 83% respondents will recommend commodity finance to others. Further agri firms were asked about their likeliness to move back to old financing methods and it was found that 90% are very unlikely to move back to old financing methods and 10% were likely to move.

**Satisfaction with the services of the bank**

Agri firms were asked about their satisfaction with the services they get from the bank regarding commodity finance. The distribution is given in the following table.
Table 16: Satisfaction with the services of the bank (N = 30)

<table>
<thead>
<tr>
<th>Satisfaction</th>
<th>No.</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Somewhat satisfied</td>
<td>4</td>
<td>13.33</td>
</tr>
<tr>
<td>Very satisfied</td>
<td>23</td>
<td>76.67</td>
</tr>
<tr>
<td>Extreme satisfied</td>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>30</td>
<td></td>
</tr>
</tbody>
</table>

Source: Same as Table 1

From Table 16, it is clear that majority of the farmers i.e. 76.67% are very satisfied, 13.33% are somewhat satisfied, and 10% are extremely satisfied with the services of the bank.

Conclusion

Commodity finance in case of agricultural commodities is a short term finance provided by banks to the farmers backed by the warehouse receipt which the bank uses as a collateral. The loan is self liquidating in nature. The study reveals that the facility of commodity finance is better than the traditional financing facilities and farmers and agri firms who are availing this facility are overall satisfied with it as they get 75% value of the commodity as finance. This has brought them out of the vicious cycle of local moneylenders. Farmers need not resort to distress sale of their produce. But the interest presently charged (12-13%) on the finance should be reduced to make it more beneficial for the farmers. Sometimes the problem of warehouse is faced by the farmers and agri-firms. The warehousing policy of the government needs to readjust with the changed requirements of farmers. New facilities need to be created for warehousing. But it has been felt that there is a lack of awareness among the small farmers and firms regarding commodity finance. There is also lack of initiative on the part of most banks to provide this facility. Only a few banks have entered this field.

The landscape of commodity finance has changed radically over the past decade. Companies involved in commodity trade have changed, the regulatory regime under which they operate has seen a far-reaching liberalization, borders between banks, investment funds, insurance companies and international traders have opened up and Government controls have reduced. Commodity financing in Asia is evolving rapidly (Bell, 2007). Warehouse receipt financing is, however, a speculative activity and farmers have to be educated on the market’s behaviour and given adequate tools to ensure that their profits are not lost as a result of speculation. Other factors critical to successful warehouse receipt systems are, building discipline and trust in the warehouse, operations on a large scale, appropriate product pricing, adequate regulation and supervision of the sector.
References


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