

Reaction Theory

Srinivas Bharadwaj

Abstract—Reaction Theory offers a new approach for studying competitive Oligopolistic Industries in the context of the overall value chain. Building on the Reaction Model, and using quantitative measures, it provides a framework for financial tools which can be used in Corporate Strategy, Industry and Value Chain Analysis and Financial Planning

Index Terms—Competitive Marketing, Financial Strategy, Herfindahl Index, Margin, Reaction Models.

I. INTRODUCTION

Reaction Theory models business changes in competitive Oligopolistic Markets using a comprehensive Qualitative and Quantitative model. It offers an analytical methodology that can be used to understand the financial and business impact of a substantive change or a series of changes that occur in an industry or in a value chain. It involves a broader integration of current existing models including the Porter Five Forces Model[1], Real Options Models[2], Game Theory[3] and the Oligopolistic models. It views the role of various businesses as reactors to a change or perturbation in an existing Ecosystem that is in Dynamic Equilibrium. Further it creates additional new measures, and quantitative tools to further enhance the understanding of these markets which a Corporate Finance Analyst or an Equity or Business Analysts who seeks to identify the end result following a period of change can use. The theories developed are applied in high-tech industries to study New Market Entry, Mergers and Acquisitions and Contingency Planning Events.

1.1 Game Theory

In Oligopolistic Markets, pricing strategy is sometimes modelled using Game Theory. Each player in the Multiplayer Game is considered as seeking a strategy, the common strategic choices being a dominant vs an adaptive strategy, a mixed strategy, a trigger strategy, signalling etc. The game itself is either a sequential move or a simultaneous move game, a repeatable (finitely repeatable or infinitely repeatable) game, or a multi-stage game. Game Theory explains reactions as a combination of tactical manoeuvres that are intended to achieve some strategic goal. Game Theory looks to achieve a certain outcome given the role-playing that others do and the players aim to preempt occurrences, force strategy changes,

and maximize a certain return. Reaction theory partly co-opts this paradigm, but goes further in looking to explain the macro effects at an industry level, and its models aim to study impact from an overall perspective over a period of time over which the reactions takes place.

1.2 Real Options

Real Options are often used to gauge or forecast the effect of a non-financial real world action that is one of several available options or choices. Flexibility is the ability to defer, hasten, grow or shrink a certain investment or action. Contingency lies in taking a sequence of actions with the follow-on action being decided by the outcome of a prior event. Volatility defines the level to which the return of an action or option can vary, it introduces the risk-return paradigm and its associated uncertainty into real actions taken to maximize returns. Many corporate financial choices can be modelled as real options with a probability of outcome. (this can be a binomial event or a continuously varying random variable) Both Black-Scholes[7] or Binomial Options continue to be used to model Real Options. Reaction Theory on the other hand, looks to forecast the macro effect of a triggering action. It tracks a trajectory in the financial sense that is the resultant effect of the originating trigger. Real Options can be worked into the trajectory, by modelling the resultant trajectory. Reaction Theory models the constraints faced by the industry as a whole and its search for a new dynamic equilibrium.

1.2 Gorilla Game in Hi-Tech Markets

Geoffrey Moore's theory [8] on picking Gorillas in Hi-Tech Markets indicates that as sectors mature, markets pick "Gorillas" that have a large market share and a controlling influence over the market sector. Examples include Intel, Microsoft and Google. Margins tend to be disproportionate for Gorillas and their marketshares dwarf those of the competition. Large R&D and manufacturing cost implies that economies of scale dominate while others anoint a gorilla.

1.3 Traditional Oligopolistic Models

Among the Oligopoly models, there is the Cournot[4], Bertrand[5], Stackleburg[6] models. Oligopoly models also deal with responses and reactions. The Cournot Oligopoly is simple where every firm believes that rivals will hold their output constant when the firm changes its output. Cournot defines the notion of a reaction function which is the profit maximizing output for a firm assuming the others produce a certain amount of output. The Stackleburg Oligopoly sees every competitor viewing itself against the market leader and competing against the leader such that they maximize their own profit.

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F. A. Author is with Sun Microsystems, Inc, Santa Clara, CA 95054
USA e-mail: srini.bharadwaj@gmail.com).

II. REACTION THEORY AND THE REACTION MODEL

Reaction Theory looks to build a qualitative and quantitative model for competitive oligopolistic markets by studying industries as a whole and in the context of the value chain that they are embedded in. It is built around the reaction model and the roles played by various players in the industry, and the effect of their actions on the trajectory of margins, competitive structure and the business evolution that results.

II.1 The Reaction Model

Consider a market with a few large players with a considerably large combined marketshare (over 80%). The various players each look to operate where Marginal Revenue = Marginal Cost. As they all do not occupy the same market, different players see slightly different demand and supply curves. This is partly because of their presence across the value chain or their focus in particular segments of the market. A trigger (new entry, a merger or a new technology) causes a perturbation of each player's supply and demand curves. Each of these supply and demand curves follow an ensembular trajectory before a new dynamic equilibrium is reached. With a view to maximizing their profit each player reacts to modify his own supply/demand curve as well as those of the others. Suppliers can reduce barriers to entry or favor relationships to suit their own interests. The result could be a series of reactions across the market.

Assume an industry serving a certain product or product segment with a certain Herfindahl index H and several players P_1, P_2, \dots, P_n ($n \leq 6$), with shares S_1, S_2, \dots , generating Margins of M_1, M_2, \dots . Assume that the various companies are in equilibrium. Assume a reaction occurs in this marketplace, eg a new entrant, a merger, a supplier action. The result will be a series of reorientations that occur over time t_1, t_2, t_3 .

The resulting trajectory of this industry is

$Industry(t_0) = H(t_0), S_1(t_0), S_2(t_0), \dots, M_1(t_0), M_2(t_0), \dots$

$Industry(t_1) = H(t_1), S_1(t_1), S_2(t_1), \dots, M_1(t_1), M_2(t_1), \dots$

etc., where t_0 is the current time and t_1, t_2 and t_3 are in the future. These industry transitions result from the reactions.

II.2 Types of Actors

There are mainly three types of profit-seeking actors, those focused on market-share, those focused on margins and those focused on brands.

II.2.1 Market-Share Driven Actors

In some industries, Market-Share is the driving force behind company power. It can also be the means through which barriers to entry are created and a mechanism for defending brands. Economies of scale result from gaining more marketshare. Actors can be market-share preserving actors both as minor or major players. Cost leaders tend to be market-share driven actors. A market-share preserving actor will look to retain marketshare, marketshare growing actors will look to increase their marketshare. Share can be measured on both a regional, national or global scale. Pepsi Cola aims to maintain and grow marketshare vis a vis its rivals like Coca Cola.

II.2.2 Margin Driven Actors

Margin is the basis of profit and loss and is a very important measure. Even in industries where a premium is placed by

analysts on Marketshare, business managers maintain a strong focus on the bottomline because their fiduciary responsibility lies primarily in pursuing this as the ultimate goal. Differentiators tend to be margin-driven. Margin Driven actors look for cost-savings that increase their gross margins as well as for ways to reduce secondary expenses both in general and administrative parts of their organization, in increasing the productivity of their sales force. IBM is a margin-driven actor.

II.2.3 Growth Driven Actors

The Growth Driven Actor is one who is looking to grow the topline at any cost. This is similar to being a share-driven actor, with the difference that a growth driven actor targets revenue rather than unit growth. Smaller players can strive for growth with a niche product and they would typically be differentiation focusers.

II.2.4 Brand Driven Actors

Several actors pursue actions that go beyond mere market-share or margins and focus instead on their brand vis a vis their clientele. Brand driven actors look to preserve their brand as a long term franchise. They do not look to actively drive up their marketshare. Nor do they look to push up margins. Instead, they pursue a long term strategy that places their franchise and the consumer's view of their business above both market-share or margins. This is very typical in higher end consumer brands, be it Gucci or Ferrari

II.3 Types of Reactions

In response to an action in the Industry, involving a significant disruption, each actor could pursue different kinds of reactions.

II.3.1 Feature Reaction

In response, a company may introduce new features into their existing product line by enhancing capabilities of each product or products. In some cases, there can even be the dropping of a feature. Each feature would have associated with it, a cost and a corresponding price increase or decrease. Common feature reactions could also include bundling or unbundling. As AT&T begins offering three services in one, more satellite and cable providers are also following suit.

II.3.2 Financial Reactions

It is possible to view mergers, divestitures, capital structure changes (where there is increased assumption of equity vs debt) and other similar actions as financial reactions. One can also include a move to go private or to go public as a financial reaction. A company that vertically integrates in reaction to a precipitating event through a merger or alters its capital structure to use either more debt can also be considered to be pursuing a different form of reaction, namely a financial one. In this paper we treat some of these reactions also as having an effect on margins and view these also in a similar context.

II.3.3 Margin Reaction

Margin reaction can result from both feature reactions, price cuts or from a cost or overhead pare down. Margin reactions can also result from Mergers and Acquisitions or from an industry exit. It could be due a technology or process improvement, price wars or rebundling.

Margin Reaction can be both a firm specific concept as well as an industry specific concept. It is viewed as the reaction that is

experienced over a specific period of time in the industry in response to a sudden significant business change. Margin Reaction can be defined wrt to an Industry Marketshare relative to a specific Herfindahl Index. As a microeconomic concept, Margin Reaction is valid only in more oligopolistic industries as perfect competitors in theory have no ability to significantly alter a market and must accept the market dynamics they face. The important difference with Oligopoly is that there is some ability to influence outcomes.

We define Margin Reaction mathematically as,

$MR(t1,t2) = \% \text{Change in Margin} / \% \text{Change in the Sq. Root of the Herfindahl Index}$

$$= (\Delta(S-VC-F) / \Delta(H^{0.5})) * (H^{0.5}) / (S-VC-F)$$

Margin across the industry (wtg avg) is for the industry itself.

Weighted Average Margin Reaction is the weighted Sum of the Margin Reactions across the industry.

$$WAMR = \sum MR_i * s_i$$

Margin Reaction could be studied or defined for both the original reaction as well as for a series of competitive measures by one company or across the industry. In the context of Gaming Theory, Margin Reaction represents a way of studying the net effect of an ongoing game as it plays out. Margin Reaction is not typically a per Unit concept as in classical Microeconomics, rather an overall market effect and hence its interaction with the Herfindahl Index is measured. Margin Reaction can be an expected measure from past history or a forecast. One can forecast the moving average Margin Reaction after a hypothetical or real merger. It can be used to study an industry as a whole or the players.

II.3.4 Relative Share Reaction

The change in the market share of a player or a group of players in response to an event (or over a period of time) relative to the change in the total competitive structure represents the Relative Share Reaction.

Mathematically, it can be defined as -

$RS(t1,t2) = \% \text{age change in the market share} / \% \text{change in the Sq. Root. Of the Herfindahl Index}$

Relative Share Reaction is the elasticity of the unit volume to a change in the competitive structure. This often might not directly scale with Margin Reaction. A related factor is the revenue reaction.

$RR = \% \text{ change in revenue} / \% \text{change in Sq. Rt of Herfindahl Index}$

II.3.5 Power Play

Power Play is defined as a series of events over a given period of time where actors act to gain control, leverage or power over a market. Power plays involve dynamic changes where the actors' reactions are intent on wresting the initiative in an industry. Many times, more than one actor acts to alter the industry towards a position they see as advantageous or profit maximizing. Sometimes, the actor could be a supplier or a buyer, an industry financier or a player in a complementary industry. Forecasters and strategists look to study the effect of power plays. In some cases, a Dupont analysis of the largest 3 or 4 players and a weighted average of the Profit Margin, Asset Turnover and Equity multiplier, before and after the power play period might provide substantial insight. In addition, studying the growth rate and its effects on both from a pre-Power Play and a Post-Power Play point of view

enhances the understanding associated with power plays. During power plays, involving growth, some players look for position at the end rather than during the power play. Changes during power play are difficult to predict as would predicting which actors would be able to achieve their goals. Post-chasm markets have a power-play period called the Tornado which sees tremendous growth along with the anointing of the Gorilla. Later on, chimps chasing marketshare often play catch up. To achieve this they often pursue price competition or differentiation strategies to initiate a power-play or in reaction to other changes in the market dynamic. Gorillas stay focused on growing Margin while maintaining share often pursuing different strategies. Some Gorillas use power-plays to weaken chimps or force them to be vulnerable to either bankruptcy or takeover.

III. THE ROLE PLAYED BY MARGINS

Margins are an important measure in determining profitability. Currently, companies determine Gross Margins, Operating Margins and Net Profit Margin with a view to better understanding their industry, their business or the individual segments in their business.

$GM = Sa - VC$, where GM is Gross Margins, Sa is Sales and VC is variable costs

$M = Sa - VC - F$, where Sa is Sales, VC is Variable Costs and F is Fixed Costs.

$S = S(S,H,D)$ - Sales is dependent on Marketshare, Concentration (Herfindahl Index) and Demand

$VC = V(S, ReP(Su), Ef)$ - Variable Costs are dependent on Share as well as Relative Power of Suppliers, and Efficiency

$F = F(Eff, S, H, ReP(Su))$ - Fixed Costs are dependent on Efficiency, Share, the Herfindahl Index and the Relative Power of Suppliers

Margins are a function of Time (t). Several factors change with time like inflation and influence factors like H, Variable and Fixed Costs

$M = M(H,t, Sa, VC, F)$

Change in Margins $\Delta M = \delta M / \delta H * dH + \delta M / \delta t * dt + \delta M / \delta Sa * dSa + \delta M / \delta VC * dVC + \delta M / \delta F * dF(5)$

The partial derivatives do not necessarily depend on time, but do vary with time. These variations can be used in scenario analysis in corporate finance or to measure industry changes.

III.1 Separating the effects

Using multiple regression (and eq 5), one can isolate the effect on margins from the various factors.

III.2 Margins and Elasticity

One more factor that determines Margins is Elasticity. Elasticity measures the percentage change in Quantity for a unit change in Price.

Elasticity (η) = $P/Q * (\delta Q / \delta P)$

$\delta(PQ) = \delta P * Q + P * \delta Q$

Thus, $\delta(PQ) / Q * \delta P = 1 + \text{Elasticity}(\eta)$

The Percentage Change in Revenue divided by the Percentage Change in Price -1 is the same as Elasticity. Elasticity along with Scale and Concentration also affect Margins. Price points

are migrated with a view to maintaining control over factors such as elasticity in power plays.

Unit growth (Q) does not necessarily lead to revenue growth(PQ) in some cases. Margin Growth results from both Sales Growth as well as Cost Reduction.

Hence we define a Margin Elasticity to Price = %Change in Margins/% Change in Price

Margin Elasticity to Price = (%Change in Margins/%Change in Revenue)*(1 + Elasticity(η))

$$= (\text{MarginReaction})/(\text{RevenueReaction}) * (1 + \text{Elasticity}(\eta))$$

Over a period of time, margins can reorient with unit growth. It is however important that Margins as well as elasticity is specific to each actor although they are competing with other actors as each actor sees a slightly different Supply and Demand Curve.

Margin Elasticity can be for the industry or for a single firm. During some periods, the margin reaction and the revenue reaction can be in different directions as a change in the concentration, might lead to higher margins despite lower revenue or vice versa.

III.3 Competitive Elasticity

Margin Reaction is best understood as a way of measuring competitive elasticity (or the effect of concentration on margins) and can be used to study, model or forecast effects of actions that are competitive. One can plot the Margins vs the Sq Root of the Herfindahl Index at any one time when the system is in dynamic equilibrium. This should produce a positive sloping curve as the higher Herfindahl Index implies less competition and thus more margins. However in the face of disruptive changes, both in technology, a large disruptive entrant, the emergence of a competitive new substitute, mergers that produce large synergies, this forward sloping curve twists or is replaced by a new curve. While sometimes it is not possible to isolate the effects it is nevertheless good to gauge the results from the effects and look for ways to filter or separate effects, when one studies competitive markets. Margin is not typically a per Unit concept as in classical Microeconomics, rather an overall market effect and hence its interaction with the Herfindahl Index is measured.

Margin Reaction can also be a forecast and an expected measure. One can forecast the moving average Margin Reaction for the 12 months after a Hypothetical merger. Potentially, it can be done for the industry as a whole and for each of the players, based on the kind of actor they would like be, namely a market-share preserving actor, or a margin preserving actor. Margin Reaction is considered stable except when a trend alters the competitive structure of the market or there is a competitive substitute or when the supply or demand curve changes. Margin Reaction is then a measure that changes with these trends.

IV. TRAJECTORY

Trajectory represents the state transitions that an industry goes through over a period of time. Even over short periods the moving average can indicate a changing Herfindahl Index as the system moves towards a new equilibrium. The Margin Reaction to a Merger can be forecast over a 12 to 18 month period. For instance, if Lenovo bought Gateway Computer,

one can forecast the effect on the Herfindahl Index of the PC market and the corresponding margin that could result from the altered marketshare(and other synergies).

In forecasting the trajectory, one can model the state transitions using a series of multinomial probabilities, involving several counter-movers. Simpler models can involve an industry wide transition to a different Herfindahl Index and a different industry wide margin. One can forecast, per Company Margins as,

%Change in Margin = MR*%Change in Sq Rt of Herfindahl Index

For instance, at t1 we could forecast that the Herfindahl Index will move from H0(t0) to either H1(t1) or H2(t1) or H3(t1) with probabilities P1, P2 and P3 respectively. Assume a fixed Margin Reaction, we could then derive the resulting margins.

Trajectory can be forecast with multiple models. One can build a simple trajectory for MR, by forecasting margins for the business or one can choose a multi-business model where we forecast the margins and the marketshare of each player and then track the overall MR for the industry. These models can be driven by trend analysis or one can build a binomial model or a more complex model based on forecasts of underlying forecasts of major actions and reactions. These can be new entrant forecasts, mergers, exits, industry altering supplier or buyer changes. Trajectory forecasting can be used in investment analysis, as a tool in corporate financial planning, logistics and capacity planning and in assessing value chain requirements.

In recent years, the Enterprise Server Market has been seeing increased competition and a rapid reduction in margins as commodity x86 based Servers have dominated larger machines by way of unit volume.

MktShr/Margin	H2/2005	H1/2006	H2/2006	H1/2007
IBM	38.4/5.3	33.1/3.8	32.1/9.8	29.7/6.9
HP	26.8/3.8	27.7/7.6	27/7.2	28.2/9.1
Dell*	9.6/5.4	10.5/6.6	10.3/5.7	11.2/6.5
Sun	8.2/-12.7	10/-12.2	10.8/-11.2	10.3/-10.1
Fujitsu	4.3/2	5.3/2	4.9/2	5.4/2.1
Herfindahl	0.237069	0.210124	0.200615	0.193802
WAM		-3	-20	0.3

The numbers above are approximate and intended for this discussion.

During the time period discussed 2005 to 2007, a series of reactions were playing out during the tail end of a Power Play phase that started after growth tapered in the Server business.

I. HP's purchase of Compaq - sell more units, improve margins and engage in a price war. (effect first seen H1 2006)
 II. IBM reaction- partly exited the commodity business, reinvigorated its higher margin servers, seeking more margin and less share(effect first seen H2 2006) This was because margin reaction and revenue reaction moved in different directions.

III. Sun entered the commodity server market. Dell grew the number of units it sold even as price declined.

IV. The stronger players in commodity servers saw increasing growth but the overall Herfindahl index steadily declined.

V. Blade Servers emerged as a new growth segment with a high Herfindahl Index of 0.32 relative to servers overall

VI. Cost reductions, layoffs and pare downs were seen all players resorted to layoffs and restructuring.

VII. A price war in both processors and DRAMs pushed up gross margins as suppliers restructured and outsourced

VIII. Currency effects - server makers benefited from the weak dollar

Both actions (1) and (2) seemed to cause large changes to competitive elasticity and eventually pushed the Average Margins across the market up as did (5). Margin preservation was the dominant interest for HP and IBM. Share Preservation or growth was the predominant interest of the next tier of players, namely Sun, Dell and Fujitsu.

V. MARGIN REACTIONS AND THE PORTER FIVE FORCES MODEL

Margin Reaction can also be in relation to a change in the marketshare or dynamics associated with respect to a buyer or a seller. The cross value chain margin reaction would measure the effect on the margin of an industry's or a single company's when the Herfindahl Index changes in a supplier or a buyer.

It is also a fact that Fixed costs at a supplier gets amortized and becomes variable costs at the buyer. Efficiencies in process at a supplier result in higher margins at a buyer. When suppliers have room for efficiencies and pursue them, gross margins increase at the buyer. Typically, suppliers could be supplying more than one industry in the value chain. The Degree of Operating Leverage would also be indirectly affected by supply-side changes.

Porter also defines types of player strategies, namely cost leadership, cost focus, differentiation and differentiation focus. When a new entrant is a cost leader, the general trend would be to shrink the WAMR. Differentiators tend to push up margins, thus a new entrant who is a differentiator would have a balancing effect, where the effect of entry is to reduce the Margin Reaction while the fact that they pursue differentiation pushes up the margin reaction.

V.1 Relative Power

We use relative power to measure the effect of suppliers on the margins of any business or industry.

Multiple forms of relative power could be defined.

Relative Supply Power on Margin = $\frac{\% \text{Change in Margins}}{\% \text{Change in Price of Supplier}}$

This is the Margin Elasticity to Price (of a supplier).

The ability to influence margins down the value chain is often a key determinant of Supplier Power. In the case of the PC industry, Processor and Operating System suppliers were once considered dominant and thus holding enormous sway over the business. This relative power over a supplier can be measured using this factor. Another example could be the effect of a change in the Oil Price on Airline Margins. The Dept. of Energy might study the effect of oil price changes on the margins of large Oil Companies.

It is also possible to see the effect of Buyer Prices on Margin. Relative Buyer Power on Margin = $\frac{\% \text{Change in Suppliers Margins}}{\% \text{Change in Price of Buyer's Product}}$

For instance, a Cell Phone manufacturer could measure the change in its margins in a geographical segment as a result of a change in the price of cellphone service in an emerging world market. Another example could be a study by processor companies on their own margins given a change in the price of PCs. (all other things being equal including concentration) Or Clothing brands could seek the effect of seasonal or longer term effects of store price changes on their own margins (based on the type of actor, they might be able to discern rules that aid their supply chain and become more profitable)

Margin Reaction to Suppliers = $\frac{\% \text{Change in Margins}}{\% \text{Change in Supplier Concentration (or Sq Rt of Herfindahl Index)}}$

In some cases, the power of suppliers weakens as there is more competition among suppliers to service a buyer. Similarly the effect of Buyer Power can be measured

Margin Reaction to Buyer Concentration = $\frac{\% \text{Change in Margins}}{\% \text{Change in Buyer Concentration}}$

V.2 Growth and Margin Reaction

In early stage growth markets, Margins can be negative and Margin Reaction normally grows with an increase in the size of the overall market when there is no change in the competitive structure. Players who are market-share driven would keep garnering market position. As growth is fast, Margins are growing and sometimes the changing competitive structure can be dwarfed by the effect of growth.

Thus a reduction in the Herfindahl Index could be accompanied by an increase in the Margin and thus MR (and WAMR) may be negative. This is because growth is in some ways a separate effect from competitive structure. The same may be true late in the business cycle when there is shrinkage in the business. At this stage Margins can be declining even as players are leaving the business and the decline can be larger than the effect of the players leaving the business. 9/11 saw the airline industry experience temporary consolidation while seeing significant drops in Margin. Thus growth and shrinkage can lead to a drop in Margin Reaction. Segments in an industry can be growing while others could be stagnant or receding to make way for the growing segment. The result is that the stagnant segment would see lower or higher margins based on its position in the overall competitive landscape. When the growing segment is a high end luxury segment, lower end segments dominated by cost leaders might also see margin growth, if the decision to grow the high end was a conscious margin-preserving action.

V.4 Outsourcing strategies

As industries grow, sometimes a vertically integrated business is challenged by a process of de-integration or outsourcing. The semiconductor Chip Industry saw the emergence of contract manufacturers and fabless design houses as the price of making chips rose. In the face of rising capital costs and declining margins, several players started pursuing the idea of

outsourced manufacturing. Outsourcing can be a margin reaction and lead to a new player in the value chain.

VI. MARGIN MIGRATION AND SUBSIDY

Margin Migration occurs when players use their oligopolistic power to leverage growth in a more lucrative segment by subsidizing it through margins from a complementary product. Total Cost of Ownership measures are usually used in assessing overall value by the customer. However, based on the relative structure, a player with a broader range of segments might spread its operating costs and it might make economic sense to subsidize competitive industries. Further, when global sales and support is involved, some products are sold only to subsidize the ability to sell others. The dominant strategy is to move margins away from heavily fought market battles. And the margins that migrate go towards points in the market where there are fewer competitors or where the "Whole solution" has fewer entities who have presence across the value chain. Migrating margins to where they are inaccessible to competitors is often a key strategy in Oligopolistic markets. It is possible for a player to move margins out of an industry, by forcing a long-drawn out price war in one part of value chain. Margin squeezes are the main reason companies that are diversified or have an advantageous position of Power in the value chain, can outmanoeuvre their competitors. Structuring a cross-flow, typically implies that the subsidized product produce a lock that can be used by the subsidizing product to generate excess margin. A further concept incorporates the using of mature industries as cash-cows to fund new stars or as a means to consolidate position. In such industries, a stable and profitable equilibrium with sufficient barriers, when reached, allows each actor to choose to find new allied industries to invest profits. Adobe grew into new businesses through acquisitions. The retention ratio might be high for such companies which choose to migrate investment between segments or borrow to fund a growth business.

VI.1 Segment Analysis

Another concept related to Margin Subsidy could be the impact of disruption in one segment on other segments. Disruption in one segment through a new entrant for instance can lead to competition and the overall segment growing and this in turn could pressure an alternative segment. With Segment Analysis, the Herfindahl Index of each of the Segments is taken as a whole and a weighted average of the Change in margins is obtained for the Industry. The result is the Margin Reaction for the segment as a whole. With disruption, any significant action will affect the segment as a whole as every player prepares to react. Substitutes and Alternatives are impacted also.

Margin Bleeding from one segment to another is the result of market share losses when one segment gains dominance over another. A segment that is considered commodity might gain more market share and thus a larger segment will likely see margin loss. Bundling tactics as a feature reaction also can be viewed as a segmental margin bleed.

Share based Bleed = %Change in Margin for segment(-ve)/%Change in MarketShare of the segment

VI.3 Margin Reaction and Leverage Measures

The Degree of Operating Leverage measures the change in operating income corresponding to a change in the number of units sold. Companies who have a higher operating leverage are more likely to be market-share driven. However a constant leverage assumption when made implies that there is a proportional change in the net income for a change in the number of units sold. With substantial disruption, this tends to sometimes not be the case. The mere threat of a new entrant leads to a substantial price-cut. In the face of disruption, total leverage could either increase or decrease. The number of units sold and the price also change in reaction. One can study the effect on leverage due a potential event by forecasting the margin reaction of the industry.

New DOL for Player = Old Weighted Income*(E(MR)*%Change in the Herfindahl Index)/(Change in %age for number of units sold)

Also, Margin Reaction of a single player is Relative Share * DOL/%change in the number of units sold.

VII. NEW ENTRANT STRATEGY WITH IPHONE AS AN EXAMPLE

The scramble following the emergence of a new entrant is sometimes not so much about retaining margin but more due to turf war around marketshare. Dynamic equilibrium will require all players to reorient margins and operations after accounting for the new reality. As different entrants see different markets, each will be looking to game the overall market to maximize their advantage. In certain defensive markets, the existing entrants will have positioned the market so that a potential new entrant has some barrier to entry.

With iPhone, Apple used the convergence of different devices and a service driven approach. It is important to understand that with services that are high up the value chain competition pushes forces further up. Apple for instance can leverage its iPod customers into the iPhone market thus carrying their franchise to include a converged services value chain. The threat to RIM, Nokia, Motorola and Palm is measured by gauging the various reactions and their effects on the smartphone market, be it feature or margin reactions. Margins erode due to feature upgrades and price cuts across the product segments. Pressure is felt even by buyers, like the service providers who are up the value chain. Feature reactions will also pepper the phone market. Music phones at the low end will imitate the iPhone. The value chain could reorient itself to accommodate feature reactions like convergence. Repercussions result across the value chain as the industry reacts to the entrant. Feature and Margin Reactions can be studied in these industries as well. The result of a new entrant is a further transfer of value back to the consumer. Value creation is the side effect across the board for the consumer in both the volume market, the various segments and across the value chain when disruptive entry occurs. Unfortunately, margin reaction is one where as the Herfindahl index decreases margin shrinks. Smart differentiators are the only ones who survive without margin

erosion. Others are forced to settle for smaller margin, unless they can expand the feature set.

VIII. MERGERS AND ACQUISITIONS

Mergers and Acquisitions are often both a precipitated reaction or an originating action that redefine markets. Mergers within the same industry could be between players in the same segment, across segments (horizontal mergers), or vertical mergers between a supplier and a buyer or to expand positioning in the value chain. When mergers occur between companies in the same segment they lead to a reduction in the Herfindahl index and this generally leads to a margin reaction in the industry. The restructuring and streamlining that follows such a merger and the associated economies of scale that result raise margins for the merged entity (realized as synergy). However, the reactions that follow could nudge the industry back down or move it towards higher margins. There could be both a reaction that is also a merger or a price reduction that precipitates a price war. The margin reaction from the former would push margins up while the latter would push it down.

Some mergers lead to discontinuation of product lines. When HP purchased Compaq, the HP PC line and the Compaq Printer Line was discontinued. Alpha and PA-Risc based systems were mostly discontinued and gave way to Itanium servers. The New HP's volumes gave it significant bargaining power for memory, monitors, CPUs, disks or contract manufacturing. The effect was higher Herfindahl Indexes and higher margins.

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