Vertical Integration Trends in the Bulgarian Pharmaceutical Sector: A Case Study

Abstract

Economic theory provides different explanations of vertical integration. Some stem from monopoly considerations and rent seeking. Others justify integration on the grounds of efficiency achieved through greater economies of scale and scope resulting from mergers. A third group of theories maintain that vertical integration is technologically determined. While all those might partly be reasons for vertical integration, transaction costs seem to be a major determinant of backward, forward and lateral integration. The paper studies integration trends in the newly emerging Bulgarian pharmaceutical sector. It gives transaction cost explanations to the recent trends for forward integration in the sector. We support the view that asset specificity determines many of the organizational transformations and adaptations Bulgarian pharmaceutical companies are undergoing. Having special attributes, their products and assets seem to favor a larger size of the companies. Furthermore, as a low-trust, high-transaction cost economy, the Bulgarian economy determines a larger scale of operations to be internalised within firms rather than carried out by the market.

I. Introduction

It is commonly believed that vertical integration is an attempt to create monopoly and to seek rents. Monopoly theories of vertical integration explain it as the instrument of price discrimination and the creation of entry barriers. Alternatively economic theory justifies integration on the grounds of efficiency achieved through greater economies of scale and scope resulting from mergers. Chandler (1966) maintains, "when economies of scope between successive stages due to technological organizational interrelationships are strong enough, these activities should be provided under joint ownership."[1] Such beliefs serve as the ground for the technological determinism behind vertical integration. Other explanations of vertical integration have been the avoidance of factor distortions in monopolized markets (Vernon and Graham, 1971,[2] Schmalensee, 1973,[3] Warren-Boulton, 1974[4]) or the transfer of risk from one section of the economy to another (Carlton, 1979[5]). In addition, some scholars emphasize that vertical integration can be an

[1] Chandler, A. D. Jr. 1962. *Strategy and Structure*. Cambridge, Mass.: MIT Press. Subsequently published in New York: Doubleday & Co., 1966

[2] Vernon, J. M. and D. A. Graham. 1971. "Profitability of monopolization by vertical integration," *Journal of Political Economy*, 79 (July/August): 924-25

[3] Schmalensee, R. 1973. "A note on the theory of vertical integration," *Journal of Political Economy*, 81 (March/April): 422-49

[4] Warren-Boulton, F. R. 1967. "Vertical control with variable proportions," *Journal of Political Economy*, 75 (April): 123-38

[5] Carlton, D. W. 1979. "Vertical integration in competitive markets under uncertainty," *Journal of Industrial Economics*, 27 (March): 189-209

organizational form used to avoid taxes on intermediate products (Stigler, 1951[6]). In the context of transfer pricing and multinational corporations vertical integration can be seen as a device to take advantage of the different treatment that national laws and tariff codes provide to the exports of products. Those exports may be treated differently within the boundaries of the firm and through interfirm exchange where intrafirm trade may be favored.

While all of the above might partly be reasons for vertical integration, we adhere to the opinion that transaction costs, more than anything, are a major determinant of vertical integration. The paper studies integration trends and gives transaction cost explanations to the recent developments in the newly emerging Bulgarian pharmaceutical sector. We support the view that asset specificity affects many of the organizational transformations and adaptations Bulgarian companies in the sector are undergoing. Their products and assets have special attributes, which leads to a larger size of the companies. Furthermore, being a low-trust, high-transaction cost economy, the Bulgarian economy dictates that a larger scale of operations be internalised within firms rather than carried out by the market.

The structure of the paper is as follows: part I is an introduction. Part II discusses the institutional approach to the study of vertical integration stressing the transaction cost perspective. Part III analyses the Bulgarian pharmaceutical sector as one of high asset specificity and a possible host for vertical integration. Part IV examines the potential for empirical research. The paper ends with a discussion.

II. Transaction Cost Economizing Effects of Vertical Integration

Scholars who question the technological origins of vertical integration take on an institutional approach to explaining vertical mergers[7]. According to Williamson (1985, p. 87) decisions to integrate are rarely due to technological determinism and technology is fully determinative of economic organization only if 1) there is a single technology, which is strictly superior to all others and 2) that technology requires a unique organizational form. As there is rarely one single feasible technology and technology hardly determines the choice among alternative organizational forms, vertical integration does not stem form technological reasons. Williamson takes issue with the anticompetitive effects of vertical integration:

"Vertical integration plainly helps preserve the continuity of a complex contracting relationship, and is best understood as a response to these underlying continuity needs. It is thus wrong to conclude that vertical integration presents antitrust problems unless attended by the "physical or technical aspects" to which earlier scholarship

[6] Stigler, G. 1951. "The division of labor is limited by the extent of the market," *Journal of Political Economy*, 59 (June): 185-93

[7] Ours is not a comprehensive study of the literature on vertical integration.

referred."(Williamson, Vertical Merger Guidelines: Interpreting the 1982 Reforms,[8] pp. 604-17, p. 614)

A subgroup of scholars see information as the root of vertical integration, where there is uncertainty in the supply of the upstream good with the consequent need for information by downstream firms (Arrow, 1975, 1985[9]) or vertical integration is the product of information externalities (Green, 1984[10]). Grossman and Hart (1986[11], 1987[12]) developed a theory of vertical integration and ownership based on the concept of contractual incompleteness due to asymmetric information between the parties to the contract and outsiders. They do not distinguish between ownership and control and define ownership as a power to exercise control. Ownership is the purchase of the residual rights of control that are too costly to be specified: "Vertical integration is the purchase of the assets of a supplier (or of a purchaser) for the purpose of acquiring the residual rights of control" (1986, p. 716).

Barzel (1982[13]) and North (1978[14]) trace vertical integration to difficulties in measurement. Barzel views vertical integration as a means to economize on measurement costs. Firms integrate when measurement of contractual output is difficult and tend to remain independent and trade with each other when output can be measured easily.

"Between the time that a commodity such as canned salmon leaves the manufacturer and the time it reaches the consumer, its physical properties and its value will have changed only slightly. Other goods such as produce and bread may change a great deal… It is predicted that ownership will change more frequently (between production and consumption) the less the commodity is subject to change. Thus, canned salmon is expected to change ownership more times than fresh salmon, powdered milk more than fresh milk, cookies more than fresh bread, and so on. (Barzel, 1982, p. 42)[15]

Williamson traces the roots of vertical integration to transaction costs and the condition of asset specificity.[16] We adhere to his view that integration is the source of transaction cost economies. Idiosyncratic attributes of transactions affect organizational form.

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[8] Williamson, O. E. "Vertical Merger Guidelines: Interpreting the 1982 Reforms," California Law Review, Vol. 71:604-17

[9] Arrow, K. J. 1985 "Informational Structure of the Firm," *American Economic Review*, Papers and Proceedings 75:303-7

[10] Green, J. 1984. "Information in economics." In Kenneth Arrow and Seppo Honkapohja, eds., *Frontiers of Economics*. London: Basil Blackwell

[11] Grossman, S. J. and O. D. Hart. 1986. "The Costs and Benefits of Ownership: A Theory of Vertical and Lateral Integration." *Journal of Political Economy* 94:691-719

[12] Grossman, S. J. and O. D. Hart. 1987. "Vertical Integration and the Distribution of Property Rights." In A. Razin, ed., *Economic Policy and Practice*. London: Macmillan

[13] Barzel, Y. 1982. "Measurement cost and the organization of markets," *Journal of Law and Economics*, 25 (April): 27-48

[14] North, D. 1978. "Structure and performance: The task of economic history," *Journal of Economic Literature*, 16 (September): 963-78

[15] Barzel, Y. 1982. "Measurement Cost and the Organization of Markets," Journal of Law and Economics 25:27-48

[16] Williamson, O.E. The Economic Institutions of Capitalism, New York: The Free Press, 1985, p. 86

Transactions accompanied by investments in durable, transaction-specific assets experience "lock in" effects which is why market exchange by autonomous entities is substituted by unified ownership (Williamson, p. 53).

Asset specificity arises in relation to special purpose and general purpose investments. Special purpose investments are more risky because specialized assets cannot find alternative uses without some sacrifice of productive value if contracts are interrupted or terminated earlier. (p. 54) Williamson distinguishes between wholly specific, semi-specific and non-specific assets where semi-specific assets involve a mixture of the other two types. Non-specific assets involve classical market contracting. The trading parties will use bilateral contracting when assets are semi-specific. In the third case of high asset specificity unified governance will prevail (Williamson, 1981, p. 1548)[17]. Specificity seems to be higher with fixed costs than with variable costs and takes several different forms: site specificity, physical asset specificity, human asset specificity, dedicated assets and brand name capital. Site specificity is a unique feature of assets located at the same place so that to economize on transportation costs. Physical asset specificity refers to investment in specialized physical capital the value of which is much smaller in alternative uses than the specific transaction for which it has been intended. The seller cannot sell the transaction specific equipment to any other buyer while the buyer is held up as there are no alternative sources of supply and the costs of unspecialised supply are very high. Examples of transaction specific human capital investments are specialized training, learning-by-doing economies or team tasks in production operations. An employee may be unique to an organization, his knowledge being highly specific to the organization's operations. Dedicated assets are an investment in generalized production aimed at selling a significant amount of product to a specific customer. An example is the expansion of an existing plant on behalf of a particular buyer. Brand name capital represents investment in brand name.

It should be noted that 1) asset specificity refers to durable investments undertaken in support of particular transactions where the opportunity costs of such investments is much lower in the next best alternative use if the transaction is prematurely terminated, 2) the continuity of the relationship and the identity of the parties to the transaction matters, and 3) contractual and organizational safeguards arise in support of such specific transactions unlike the case of non-specific transactions where no safeguards are needed. (Williamson, 1985, p. 55) Vertical integration will play a role with high asset specificity. It will not be observed in the neoclassical transaction case where "faceless buyers and sellers … meet … for an instant to exchange standardized goods at equilibrium prices" (Ben Porath, 1980[18], p. 4).

Furthermore, asset specificity matters for organizational form when it is combined with bounded rationality, opportunism and uncertainty. Bounded rationality is the rationality

[17] Williamson, O. E. 1981. "The Modern Corporation: Origins, Evolution, Attributes," *Journal of Economic Literature*, Vol. 19, No. 4 (Dec. 1981), 1537-1568

[18] Ben-Porath. Y. 1980. "The F-connection: Families, friends and firms and the organization of exchange," *Population and Development Review*, 6 (March): 1-30

of individuals who are "intendedly rational but only limitedly so" (Simon, 1961[19], p. xxiv). Transaction cost economics assumes that human behavior has an economizing orientation revealed by intended rationality but there are cognitive constraints to it. Bounded rationality differs from maximizing and organic rationality, the former showing a maximizing orientation in the presence of full information, the latter being one of complete ignorance.

Opportunism is the strongest form of self-interest seeking[20]. It refers to the efforts to hide or distort information, mislead, disguise, obfuscate or confuse. It leads to the condition of asymmetric information, which poses serious problems in contractual relationships and economic organization. Williamson stresses that opportunism is the source of "behavioral" uncertainty in economic transactions. It differs from simple self-interest seeking, which is a semistrong form of self-interest seeking and from obedience, which is equivalent to non-self-interest seeking. Behavioral uncertainty stems from the intentional non-disclosure, disguise, distortion or misrepresentation of information and not from the lack of information. Uncertainty affects economic organization when it is paired with asset specificity.

"Whenever assets are specific in nontrivial degree, increasing the degree of uncertainty makes it more imperative that the parties devise a machinery to "work things out" since contractual gaps will be larger and the occasions for sequential adaptations will increase in number and importance as the degree of uncertainty increases. Also, and relatedly, concerns over the behavioural uncertainties … now intrude." (Williamson, 1985, p. 60)

The incentives for vertical integration strengthen as transactions take on a more specialized character. As assets become more specific to a single use and, therefore, are less transferable to other uses, parties become more open to opportunism and require the special protection that integration can supply. "Unified governance" then takes the place of market governance, which is the prevailing mode of occasional and recurrent contracting with non-specific investment. Vertical integration allows adaptation to be made sequentially without the need to consult, complete or revise interfirm agreements. "The advantages of integration thus are not that technological (flow process) economies are unavailable to nonintegrated firms, but that integration harmonizes interests (or reconciles differences, often by fiat) and permits an efficient (adaptive, sequential) decision process to be utilized."[21] (Williamson, The Vertical Integration of Production: Market Failure Considerations, p. 23) Under the unified governance hierarchy individual units give up their autonomy with the aim to achieve joint profit maximization. Williamson (1985, p. 78) predicts that price and quantity adjustments will be more complete in vertically integrated enterprises than in interfirm trading.

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[19] Simon, H. 1961. *Administrative Behavior*. 2nd ed. New York: Macmillan. Original publication: 1947

[20] Williamson. O. E. The Economic Institutions of Capitalism. P. 47. Williamson defines opportunism as "self-interest seeking with guile. This includes but is scarcely limited to more blatant forms, such as lying, stealing, and cheating. Opportunism more often involves subtle forms of deceit. Both active and passive forms and both *ex ante* and *ex post* types are included."

[21] Williamson, O. E. "The Vertical Integration of Production: Market Failure Considerations," in "Firms, Markets and Hierarchies: the Transaction Cost Economics Perspective," edited by Glenn R. Carroll and David J. Teece, Oxford: Oxford University Press, 1999, pp. 17-31

What should be taken into account are not just the bureaucratic costs of governance but also the production costs. Williamson emphasizes that when asset specificity is low market contracting between successive production stages has good economizing properties because the governance costs of market procurement are small and production economies can be achieved. As asset specificity increases vertical integration is the preferred mode of economic organization. (Williamson, 1985, p. 90) He does not treat governance costs independently, however, but together with production costs, where the production cost penalty of using internal organization is large for standardized transactions for which market economies are high. The result obtainable is that economies of scale and scope favor market contracting over a higher value of asset specificity than would be observed if production economies were absent. Production costs seem to move the point of indifference to make or to buy to higher asset specificity.

We can extend this analysis to the individual firm's profit. Let the firm choose between two modes of procuring a good. One is the option to make the good to one's own requirement and another is to procure it from the market. If we assume that the firm sells its output q at a particular price p, we can treat revenues as constant in both cases and independent of the asset specificity k [22]. Let the profit of buying the item on the market be a function of the asset specificity such that

$$\pi_M(k) = pq - C_M(k) - M(k) \qquad (1) \qquad \frac{\partial C_M}{\partial k} > 0 \qquad \frac{\partial M}{\partial k} > 0$$

where $C_M(k)$ are the production costs when the item is procured through the market and $M(k)$ are the governance costs. Asset specificity increases the production and governance costs of market contracting so we have $\frac{\partial C_M}{\partial k} > 0$ and $\frac{\partial M}{\partial k} > 0$.

Furthermore, let the profit of the firm when producing the item be:

$$\pi_\beta(k) = pq - C_\beta(k) - \beta(k) \qquad (2) \qquad \frac{\partial C_\beta}{\partial k} < 0 \qquad \frac{\partial \beta}{\partial k} < 0$$

where $C_\beta(k)$ and $\beta(k)$ are the production and governance costs of producing the item to one's own requirements, respectively. As asset specificity favors internal governance both the production and the governance costs of making decrease with asset specificity and $\frac{\partial C_\beta}{\partial k} < 0$ and $\frac{\partial \beta}{\partial k} < 0$. Subtracting equations (1) and (2) we obtain

$$\pi_M(k) - \pi_\beta(k) = C_\beta(k) - C_M(k) + \beta(k) - M(k) = \Delta C + \Delta G$$

[22] Following Williamson's notation.

where we set $C_\beta(k) - C_M(k) = \Delta C$ and $\beta(k) - M(k) = \Delta G$. According to Williamson ΔC shows the steady state production cost difference between producing to one's own requirements and the steady state cost of procuring the same item on the market (1985, p. 92). On the other hand, ΔG is the difference in governance costs, i.e. between the bureaucratic costs of internal governance and the corresponding governance costs of markets. In Williamson's model the difference $\Delta C + \Delta G$ falls with asset specificity as shown in Figure 1.

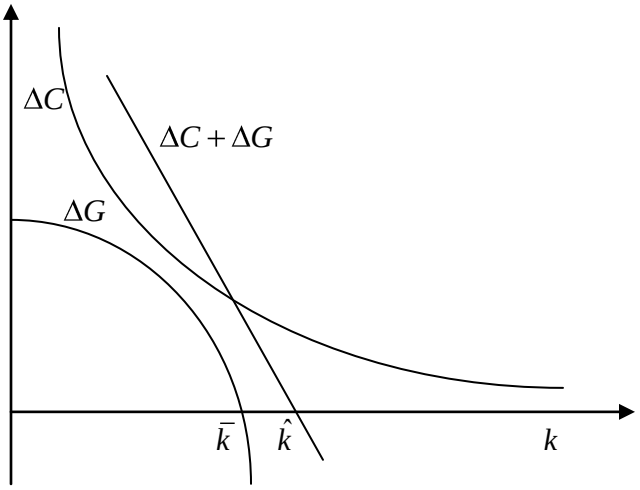

Figure 1. Comparative Production and Governance Costs[23]

The result

$$\pi_M(k) - \pi_\beta(k) = \Delta C + \Delta G$$

is depicted in Figure 1. We can review three situations:

1. $\pi_M(k) - \pi_\beta(k) = \Delta C + \Delta G > 0$

The difference in total costs $\Delta C + \Delta G$ lies above the horizontal access, which implies that the firm would achieve a greater profit by buying the item from the market rather than producing it. What we observe in this case is that the firm's profit is a direct function of asset specificity where for low values of asset specificity below a critical value $\hat{k}$ buying the item promises greater returns than making it in the make-or-buy decision.

2. $\pi_M(k) - \pi_\beta(k) = \Delta C + \Delta G = 0$

[23] Source: Williamson, O. E., Economic Institutions of Capitalism, p. 93

This is the point of indifference where some particular asset specificity $\hat{k}$ yields the same profits within and outside the firm. It is irrelevant to the firm which mode of procuring the item it would choose – to make or to buy it.

3. $\pi_M(k) - \pi_\beta(k) = \Delta C + \Delta G < 0$

For a very high asset specificity where actual asset specificity exceeds the critical value $\hat{k}$ the profit of making the item exceeds that of buying it on the market. Profitability of producing to one's own requirements increases with asset specificity, while that of buying from the market decreases.

We can demonstrate the effect of asset specificity on individual profits with the help of differentiation

$$\frac{\partial \pi_M}{\partial k} = -\frac{\partial C_M}{\partial k} - \frac{\partial M}{\partial k} < 0$$

As both partial derivatives on the right are positive, profitability of obtaining the item through the market falls with the increase in asset specificity. Asset specificity does not favor market procurement.

$$\frac{\partial \pi_\beta}{\partial k} = -\frac{\partial C_\beta}{\partial k} - \frac{\partial \beta}{\partial k} > 0$$

The effect of asset specificity on the profit of producing the item is positive which implies that asset specificity favors own production. This conclusion follows from the fact that the two partial derivatives on the right are negative.

As an industry matures, the uncertainty in it decreases and the benefits that accrue to vertical integration presumably decline. This means that vertical integration would mostly be observed in relatively new industries and in sectors producing new products. Larger firms will be more integrated into components than smaller ones, *ceteris paribus*. A multidivisional form firm will be more integrated than a unitary form firm, *ceteris paribus.*

Williamson distinguishes between tree major types of operations: 1) the core operations requiring common ownership of resources (in the case of site specificity), 2) a set of transactions in which own supply is clearly uneconomical and market supply is preferable (like raw materials) and 3) a set of activities for which make-or-buy decisions can be made only after assessing the production and transaction cost consequences of alternative modes. (p. 98). Thus Williamson concludes that the transaction cost approach to vertical integration requires selectivity and that integration can not only be good, but bad as well. Examples of wrong integration give an insight into that.

Refuting some of the monopoly grounds for vertical integration transaction cost economics favors the formation of larger firms when transaction costs are particularly high or when asset specificity makes internal organization advantageous to market contracting. However, asset specificity is a factor only with high degree of opportunism. With low opportunism parties are not so vulnerable to the risks of contracting which is illustrated by Table 1.

		Asset Specificity	
		Low	High
Opportunism	Low	Market	Market
	High	Market	Firm

Table 1. Choice of market versus firm contracting

Only with a high degree of asset specificity and opportunism is the firm a better form of economic contracting. In all other situations transactions would likely be carried out through the market. When the transaction cost framework is used to explain why mergers are attempted larger firms are no longer a threat. Even in cases in which there are no sufficient economies of scale achieved by the merger and production considerations may play a secondary role, reasons other than the use of monopoly power and monopoly rent seeking may be the driving force behind that merger. Production cost economies absent, two firms may vertically integrate because of transaction cost efficiency.

Mundane integration is that of successive stages within core operations. This type of integration is explained with high asset specificity and stronger dependency of the parties in the core operations of a business activity. Integration of peripheral activities includes backward integration into basic materials, lateral integration into components and forward integration into distribution. Forward integration into wholesaling is observed for products that need coordination of marketing and distribution, where branding is practiced or products require special handling. For products and industries where product differentiation is essential the need for proper advertising as part of the promotion mix also determines ownership of wholesaling. The Bulgarian market for medicines is an example of such an industry. Forward integration into retailing extends the case of ownership of distribution where special handling and proper representation of the product continue to be important to the sales of the product. Products that are not long lasting often require such special handling. Products that require information, special demonstration or proper display also determine the ownership of retail stores. Furthermore, the Bulgarian pharmaceutical sector should be strongly integrated forward as medicines require sufficient information to be given to consumers. The need for maintenance and repair for some products also drives integration into retailing. Office machines, for example, are a case where demonstration, sales and service require specialized knowledge that only the manufacturer has. Agricultural products represent a case of consumer nondurables for which timely distribution and sale is important.

Integration is likely to be mistaken when it is not based on transaction cost economies but has solely anticompetitive aims such as preventing a competitor's access to the market or obtaining full control over the marketing channel for a product for which asset specificity is low. Williamson concludes that "forward integration is never observed if externalities and asset specificity are negligible … or if it does occur it is mistaken… and will be eventually undone." (198, p. 113)

Backward integration is assumed for more basic materials while lateral is the one into components and parts. The downstream firm (the manufacturer) is not only open to uncertainty in terms of the timeliness of supplies from the upstream firm (the supplier). It is open to risks in terms of quality variations as well as the hazards of pricing the upstream firm will practice. Asset specificity determines a greater dependency between the supplier and the manufacturer.

There are limits to firm size and Williamson asks why can't a large firm be compared to a collection of small firms and perform everything a collection of small firms can do (1985, 131). When a small firm becomes part of a bigger enterprise, the property-rights structure is changed; from residual claimants former entrepreneurs turn into managers and their economic incentives and behavior change.[24]

In the conditions of high transaction costs asset specificity would play a major role in shaping the structure of the economy. In transitional countries like Bulgaria it could be expected that basic industries will evolve due to excessive opportunism. Sophisticated and complex industries will not advance because of the additional transaction costs that the hold-up problem brings. Firms in Bulgaria will be less likely to trade with sophisticated assets, machinery or skills as they will be exposed to the additional risks of costly bargaining. Basic products would be sold. Management would generally be less competitive and skilful and would perform mostly non-specific tasks. Workers will also tend to have very general skills. They will not specialize and invest in firm specific human capital. For that reason labor turnover is expected to be high and the effects of learning by doing to be insignificant.

In the conditions of costly bargaining firms will avoid specific assets or will tend to integrate vertically. Non-specific assets would be the preferable mode as they allow greater reliance on competitive resource allocation and a particular supplier or buyer can easily be replaced with another one. Finally, there would be a greater tendency for large firms to appear in high transaction costs (expensive) markets, which determines strong integration trends in the Bulgarian economy.

Vertical integration has been described as the "make-or-buy" paradigm of transaction cost economics.[25] Monteverde and Teece (1982) provided one of the first empirical

[24] Furubotn, Richter, 178

[25] For a more thorough review of the empirical literature see Shelanski, Howard A. and Peter G. Klein, "Empirical Research in Transaction Cost Economics: A Review and Assessment," in Firms, Markets and Hierarchies: The Transaction Cost Economics Perspective," edited by Glenn R. Carroll and David J. Teece, New York, Oxford: Oxford University Press, 1999

studies giving a contractual interpretation of vertical integration[26]. They examine the effects of asset specificity defined as worker-specific knowledge on the decisions to produce components or to obtain them from outside suppliers. They use a list of 133 automobile components coded as made or bought and enlisted an automobile design engineer to develop an index measuring the degree of engineering effort involved in the production of each component. They use a probit model regressing integrated versus non-integrated production of components on the degree of engineering effort. They include a proxy for whether the component is specific or generic. Their findings support the transaction cost paradigm formulated by Williamson. Companies like General Motors and Ford will prefer backward integration when the components are firm-specific and their design is highly correlated with other parts of the automobile system. Internal organization thus safeguards the automobile manufacturers from supplier opportunism.

In a study on the procurement practices in the aerospace industry Masten (1984)[27] examines both asset specificity and product complexity as determinants of vertical integration. Using tests based on a probit model of the dichotomous choice between internal and external procurement of supplies he finds that design specificity and complexity are necessary conditions for the integration of production within the firm. A number of other empirical studies exist but most of them are dedicated to backward integration into components, materials or R&D. There seems to be less emphasis on forward integration into marketing and distribution. In an earlier study Lilien (1979)[28] models a company's use of captive (direct) channels versus independent (indirect) channels for a product line. He finds that captive channels appear with larger firms, larger average orders, and more complex products.

One other essential study is conducted by Anderson and Schmittlein (1984)[29] who examine human asset specificity as a factor for vertical integration in the electronics industry. In particular, they treat the use of employees as a direct sales force (integrated sales force) versus reliance on independent manufacturers' representatives (non-integrated sales force). They find specific human capital and measurement uncertainty to be important determinants of vertical integration while sales uncertainty not to be. This is followed by a study by Anderson (1985)[30], also in the electronics sector. Based on transaction cost analysis she develops a model of when the selling function in a district is performed by employees rather than by outside agents. Her main findings are that the greater combination of transaction-specific assets and environmental unpredictability leads to greater likelihood of integration and that unpredictability alone does not have an impact on the use of direct salespeople. She defines several sources of transaction

[26] Monteverde, Kirk and David J. Teece (1982), "Supplier Switching Costs and Vertical Integration in the Automobile Industry," Bell Journal of Economics, 13, 206-213
[27] Masten, Scott E. 1984. "The Organization of Production: Evidence from the Aerospace Industry," *Journal of Law and Economics*, 27, 403-417
[28] Lilien, Gary L. (1979), "Advisor 2: Modeling the Marketing Mix Decision for Industrial Products," Management Science, 25, 191-204
[29] Anderson, Erin and David C. Schmittlein. 1984. "Integration of the Sales Force: An Empirical Examination," *RAND Journal of Economics*, 15, 385-395
[30] Anderson, Erin. 1985. "The Salesperson as Outside Agent or Employee: A Transaction Cost Analysis," *Marketing Science*, 4, 234-254

specificity of assets: company nature, products, confidential information, customer nature, customer loyalty and importance of key accounts. The results of Anderson's study show that uncertainty in the form of difficult-to monitor performance is more powerful than any of the sources of transaction specificity of assets in explaining the integration of personal selling where human assets are the most significant of the four types of specific assets.

The study by John and Weitz (1988)[31] uses data from several industrial-product industries. They use key informants in each firm and analyze the resulting data through multiple regression and multinomial logit analysis. They also find that firms are less likely to use reseller channels when specific asset levels are higher. In their study on the carbonated soft drink industry Muris, Scheffman and Spiller (1992)[32] attribute the move from independent bottlers to captive (integrated) bottling to changes in asset specificity. According to them the shift to national cola markets as well as the changing technologies in the production and distribution of cola brought the need for greater coordination of advertising and promotional activities.

III. The Bulgarian Pharmaceutical Sector

Pharmacy chains hold about one fourth of the retail drug market in Bulgaria. According to IMS Health, the largest international agency researching pharmaceutical markets, they hold 25% of the market in value terms, while others estimate their market share to be between 20 and 30%, which is the equivalent of 186 and 289 million levs[33]. The number of pharmacies grew from 4000 in 2003 to 4518 in 2004. This shows too many players on a relatively small market. The drug market is expanding and the turnover of all pharmacies increased 15% from 800 million levs in 2003 to 927 million levs in 2004. There are limits to growth as the total number of pharmacists in Bulgaria is 5400, which is the maximum number of licenses that can be obtained. Of all 460 registered wholesalers only 80 are operative. There is room for five distributors on the market at the national level, some 10-12 on a regional level, while the number of pharmacies should be half of what it is.[34]

While the Bulgarian population is decreasing, it is demanding more and more sophisticated medicines. Consumers seek medical drugs not only when they are ill, but also when they need a better quality and healthy life. They have higher expectations not only in terms of drugs but also in terms of additional products pharmacies sells such as cosmetics, food additives (vitamins), medical supplies, etc. Such drugstore sales have a growth rate of over 100% annually. Customers seek good service, advice, product

[31] John, George and Barton A. Weitz. 1988. "Forward Integration into Distribution: An Empirical Test of Transaction Cost Analysis," *Journal of Law, Economics and Organization*, 4, 337-355
[32] Muris, Timothy J., David Scheffman and Pablo Spiller. 1992. "Strategy and Transaction Costs: The Organization of Distribution in the Carbonated Soft Drink Industry," *Journal of Economics and Management Strategy*, 1, 83-128
[33] *Capital*, "The Neighborhood Pharmacy Sentenced to an Alliance," Dessislava Nikolova, Issue 6, 2005
[34] *Capital Weekly*, "Bulgarian Drug Business Consolidates," Dessislava Nikolova, Issue 4 (29 January – 4 February), 2005

variety, etc. An exemplary outlet is one, which is fully computerized, has a list of all necessary items, several knowledgeable pharmacists and is usually owned by a large chain. Other considerations are price and geographical proximity. Bulgarian consumers prefer to have their medicines nearby.

Profitability in the sector is low. Only half of the 4518 pharmacies are profitable. The interfirm indebtedness in the sector reached 500 million levs in the end of 2004. The financial burden falls on distributors while hospitals and part of the pharmacies instead of paying for the drugs received on consignment from one wholesaler approach another wholesaler. Indebtedness in the sector seems to hurt producers the most. Unable to control financial flows and the proper sale of medical drugs they lose profits and encounter high contractual opportunism. The mechanism of consignment does not affect wholesalers and retailers as they do not invest real capital in the distribution but their losses are rather transferred onto producers who do not receive their payment.

The government controls the distribution of drugs in that the producer sets a particular price and the Health Ministry determines a maximum retail threshold on that price. The presence of multiple layers in the distribution boosts the final price paid by the consumer. Wholesalers and retailers turn out to act only as redistributors.

The most famous chains in the country are Sanita Franchise (60 outlets), Seyba (110), Sofia Pharmacies (56) and Exemplary Pharmacies (170). There are two major types of pharmacy chains – the so called long and short chains. The short chains are regional groupings of two, three to five outlets that have been formed after the privatisation of the former state-owned pharmacy companies. Some of the more famous short chains include Mareshki for Northeast Bulgaria, Municipal Pharmacies in Burgas, Interpharma in Stara Zagora, Multipharma in Yambol, etc. The long chains, on the other hand, are franchised under the same trade name. They represent some major investors, producers and wholesale distributors of medicines. Although vertical integration is illegal, a process of consolidation takes place that gives advantages to big market participants. It threatens the small independent family-type pharmacies. Those that do not merge or expand go bankrupt. Small pharmacy stores try to stay competitive by violating the rules of honest competition and good customer service.

Large pharmacy chains offer big discounts on which small independent outlets cannot compete. At the same time small pharmacies and independent distributors increase the price of the final good substantially – manufacturers receive only 53% of the final price, the rest being wasted along the distribution channel. Competition takes place on the basis of discounts and not so much on quality of service.

There are three leading local drug manufacturers: Actavis, Sopharma and Chaika Pharma. According to IMS Health in 2005 the Bulgarian drug manufacturers sold drugs at retail prices to the amount of 250 million levs and held around 20% of the national pharmaceutical market. Actavis has the largest share in the production of Bulgarian drugs.[35] While Actavis and Sopharma emerged from the former Bulgarian

[35] *Capital*, "Actavis with a Record Number of New Drugs," Issue 5, 2006

pharmaceutical companies Balkanpharma and Sopharma after their privatization and restructuring, Chaika Pharma is a new firm established and licensed in 2000. Its core business is primary packaging of tablets and blister packages, secondary packaging in carton packages and boxes and labeling of sealed capsules. In 2001 it passed a good manufacturing practice (GMP) audit by Hoffman LaRoche for primary and secondary packaging of two of its products.

Drug manufacturers such as Actavis, Sopharma and Chaika Pharma insist on the need for full vertical integration along the channel producer-distributor–pharmacy chain. As the Law of Medical Drugs only allows producers to acquire wholesalers but not retailers producers secretly develop franchising schemes that do not include direct ownership of retail outlets but de facto allow controlling the financial and commodity flows. Thus despite the law Sopharma and Chaika Pharma are fully vertically integrated structures and Actavis has attempted to follow with the acquisition of the Hygia distributor.

A second group, that of the independent distributors, does not plan on vertical integration and the acquisition of downstream firms. Phoenix's Lybra and the independent distributor Sting oppose the liberalization and legalization of vertical integration. Through Lybra the Pan-European distributor Phoenix would enter the Bulgarian insulin market thus threatening Tradeconsult, a major distributor of insulin. The three independent national distributors are Sting, Biomeda and Tradeconsult.

The Bulgarian Health Law does not treat pharmacy chains. According to the Law licenses are issued only to holders of a master's degree in pharmacy. It does not treat the ownership, nor the relationship of the owner with the license holder. The sector has attracted a lot of local capital with expectations for return on investment of 20 to 30%. The margin that pharmacies sell at is 38% above the manufacturer's prices.

As to location, most of the big chains seem to have established themselves in the bigger cities while operating in small towns and villages seems unprofitable. Integration cannot likely affect small family-type pharmacies in small towns, as they do not have competition. Rather, it will reduce the number of pharmacies in the big cities.

The Law of Medical Drugs prohibits vertical integration along the producer-wholesaler-pharmacy chain. It permits integration only between producer and wholesaler. Drug manufacturers and wholesalers can neither own pharmacies, nor participate in companies, which own pharmacies. Manufacturers cannot own firms that trade with drugs other than their own. An amendment to the Law of Medical Drugs was adopted in May, 2005 prohibiting the participation of manufacturers in wholesaling as well as of wholesalers in manufacturing thus banning effectively the mergers of producers and wholesalers.[36] The aim of the amendment was to block the process of consolidation taking place in the pharmaceutical market and in particular vertical integration. Examples of manufacturers related to wholesalers are Sopharma to Sanita and Chaikapharma to Commercial League.

[36] *Dnevnik*, "Vitamins Will Be Sold Legally in Pharmacies," May 4, 2005

A new law on medicines is expected to be adopted regulating the distance between two pharmacies, the per capita number of pharmacies, the number of pharmacists per outlet, the product base and the technical equipment. The current Law of Medical Drugs allows pharmacies to sell only medicines, cosmetic and sanitary products. There is a debate about the sale of vitamins, which are considered food additives but are effectively sold in pharmacies. The new law will be a follow-up to regulations in the European Union as Bulgaria joined the EU in January 2007. Some countries in the EU permit vertical integration between manufacturers and distributors and others do not but the common trend seems to be the move toward chains and greater liberalization. Bulgaria's acceptance into the EU requires distributors and pharmacies to have certificates of good distribution and pharmacy practice and will impose regulations that a number of participants will not be able to abide by. The Bulgarian Parliament, which has the legislative power, is strongly influenced by the lobby of the small, family-type pharmacies. The debate about whether there should be vertical integration continues whereas politicians, health authorities and small businessmen oppose vertical integration on the grounds that it is a potential for monopoly. Foreign companies importing drugs through wholesalers believe there should be a public debate on vertical integration.

The opposition to vertical integration in the pharmaceutical sector goes back to the year 2000 when Commercial League, a leading distributor, attempted to build up a plant for the production of life-saving and life-maintaining medicines such as infusion solutions and amino-acids used in pre-hospital and hospital treatment. Such products find good application in emergency care where quality of early treatment is crucial for overall treatment and insures cost savings. The project developed jointly with the Austrian firm Austroplan would represent a total investment of 46 million deutsche marks. The new plant would produce 4.5 million litres of basic solutions at the first stage using an up-to-date American technology and opening 350 new jobs. It would follow the GMP standard of best practice and would allow to foster competition, substantially reduce the imports of infusion solutions and even export some of the produce to countries like Macedonia, parts of Northern Greece and Romania. Commercial League, which is a major wholesaler, has 70 consignment storage houses in Bulgaria but also owns a tablet packaging plant in the city of Varna. Commercial League was said to be the de facto owner of at least two pharmacy chains (a total of 30 to 60 outlets). The company tried to obtain Sofia Pharmacies through the Dimitrova Pharma Commerce Company. Commercial League was also known to own the Pharmatel Company for door-to-door sales[37].

The charges against Commercial League were that it would not allow competitive products to be sold in its outlets thus limiting product variety and consumer choice. The other distributors and producers which were not vertically integrated would be at a disadvantage as vertically integrated structures along the production, wholesale and retail sale of drugs allow achieving a high profit margin. The Law of Medical Drugs stated that vertical integration threatens competition.

[37] *Capital*, "A New Scandal Arises around a Commercial League Project," Galina Alexandrova, Issue 40, 2000

Meanwhile, the Executive Agency on Medical Drugs has reported a large number of violations of good commercial practices in pharmacies. Twenty-one of them worked without license in 2004. Small pharmacies often do not store thermo-sensitive drugs properly. Sometimes toxic substances are kept together with all other drugs in the main premise of the pharmacy. A major violation of the regulations on the proper storage of drugs is that narcotics are not kept in special metal cases but are available in the main premise of the pharmacy. There are multiple occasions of storage and sale of medicines beyond their expiration date. The pharmacies continue to sell a large number of medicines, which for one reason or another have been banned from sale. Many of the items lack instructions for use in Bulgarian. Assistant pharmacists sell prescribed medicines to patients, which also contradicts the law. A number of medicines are sold without the necessary sale authorization or without the accompanying accounting documents. Very often nonexperts operate in the pharmacies. Small, independent pharmacies resort to unfair competition to survive.

Producers cannot control the way their products are sold, displayed or promoted. To circumvent the legal ban on vertical integration they register themselves by legal entities, their distributor by other entities, while pharmacies are registered by individual pharmacies. Such is the connection between the Chaikapharma production plant, its distributor Commercial Leage and the Exemplary Pharmacies chain (See Table 2).

Drug Manufacturer	Wholesaler	Retailing
Sopharma	Sopharma Trading	Yes, through Sanita Franchise
Actavis	Hygia	No, attempted through Mareshki Pharmacies
Chaika Pharma	Commercial League	Yes, through Exemplary Pharmacies and Pharmatel, attempted Sofia Pharmacies

Table 2. Vertically integrated structures in the Bulgarian pharmaceutical sector

Table 2 presents the vertically integrated structures in the Bulgarian pharmaceutical industry where each major drug producer has integrated with a wholesaler. Sopharma and Chaika Pharma are already fully vertically integrated as shown by Table 2. Sopharma owns Sanita Pharmacies through the Sopharma Trading Holding, while Chaika Pharma owns Exemplary Pharmacies and Pharmatel for door-to-door sales through Commercial League, which also attempted to obtain Sofia Pharmacies. Actavis has attempted to buy out the Mareshki Pharmacies through its distributor Hygia but has not been successful.

Sopharma

Sopharma is a major pharmaceutical company in Bulgaria. From a laboratory for extracts, infusion solutions and tablets created in 1933 it grew into the Galenus Plant in 1942 and became the first modern industrial enterprise on the Balkans producing medicines. At that time it competed with leading German and Swiss firms in the industry. In its 71-year history the company has undergone several political and economic regimes. Its major

areas of concentration are medicines and pharmaceutical products, research and development, production and trade with medical substances and biotechnological products. Sopharma is engaged in research, manufacturing and trade in proprietary pharmaceutical substances, phytochemical products and finished drug forms. It also manufactures products under license of leading research-based companies such as GSK and Boehringer Ingelheim. Major shareholders in Sopharma are Electroimpex AD (60%) and Unifarm Holding (40%).

Sopharma owns more than 28 patents and know-how for more than 300 types of technology including phytochemistry. The industrial property of the company includes over 170 trademarks all of which have been commercialised. A major proportion of the company sales represent tablets (55%), followed by capsules (ampoules) (34%), liophyl flacons (6%) and syrups (5%). The firm is unique in the country for its capsule production that meets the world GMP standard. It exports more than 70% of its output to over 30 countries but 83% of all exports go to Russia, Ukraine and Poland. Other countries where the company exports include Belarus, countries in the Caucasus, Mongolia and Albania. The company is well established on the domestic market but its share in it is only 15%, of which gallenic products take 35%.[38]

Company products are sold with the help of wholesale distribution. The major wholesalers for Sopharma are Sanita Trading, Commercial League, Hygia, Sting, S&D Pharma, Global Medical, Kaliman, Unipharma 2000, Coral, Plamar, Biopharmacy, Multipharm. The National Health Case and the Ministry of Health are among the company's leading clients. Major competitors include Actavis, Chaika Pharma and some smaller pharmaceutical manufacturers and importers of medicines.

Sopharma has achieved a high degree of profitability through the pursued strategy of vertical integration and production optimisation. As one of the most stable public companies in the country, it attracts foreign investor interest. It stabilized quickly after its privatisation and has ever since been one of the most traded, highly valued companies on the underdeveloped Bulgarian stock exchange market. The new management of the company reduced the copying of trademarks owned by the company and stabilized it financially. The net revenues increased from 106.9 million levs in 2003 to 112.2 million levs in 2004. At the same time cost savings contributed to an increase in the company's profits from 10.47 million levs for 2003 to 22.48 million levs in 2004 which is more than doubling of profits. Although the company expanded its production activities the total costs fell form 103 million levs in 2003 to 93.45 million levs in 2004. The cost reductions result from economies on raw material costs, financial costs as well as costs of exchange rate operations. Some of the major strengths of the company include the variety of products (more than 100 items), ownership of trademarks for some of the most popular drugs in Bulgaria, the competitive prices and high quality of products as well as the vertical and horizontal integration of the production process. Among the major threats of the company are the illegal import of medicines in the country, the intensifying competition and dumping from foreign companies, the incomplete implementation of the

[38] *Dnevnik*, "Sopharma," February 21, 2005

health reform by the government and the lack of legislative clarity on the operations of pharmaceutical manufacturers.

In the beginning of 2005 the company appropriated shares in a number of pharmacy chains, particularly, 9.99% of Kaliman, 9 shares of Global Medical and 9.99% of Sanita Trading. These are three of the largest wholesalers in the country. The goal was to restructure the Bulgarian pharmaceutical market. The plan to buy out Kaliman, Sanita Trading and Konsumpharm completely will create a new company – Sopharma Trading, a strong market structure, which will be among the first five in the country.[39] The company management hopes that the Commission for the Protection of Competition (CPC)[40] will allow the merger of the companies. However, the many legal obstacles in Bulgaria slow the process of consolidation. The formation of Sopharma Trading together with the entrance of the Pan-European distributor Phoenix will increase the degree of consolidation in the market.

The new structure that will be formed will hold 10-12% of the medical drug market in the country. Thus the market value of Sopharma Trading is estimated at 3 million euro on the basis of market share. The major competitors of the newly formed structure are Commercial League, Hygia, Lybra bought by Phoenix and Sting. The current executive manager of Sanita Trading will become manager of the newly created company while the majority owner of Kaliman will become a commercial manager for Sopharma.

In addition to the purchase of wholesalers Sopharma has been involved in the privatisation of Electroncommerce, an enterprise licensed by the Nuclear Regulation Agency to trade, transport and handle radioactive materials and nuclear technology as well as to sell supplies to clinics, in particular radioisotopes for X-ray technology. Sopharma obtained the company for 190,000 levs.

Actavis

Another major pharmaceutical manufacturer is Actavis. Established in 1956 as Pharmaco (the company had that name until 2004) the Icelandic company started its world growth from Bulgaria. In 1999 the then Pharmaco invested in the Bulgarian Balkanpharma plant jointly with the Amber International Investment Fund. The following year it privatised the three big pharmaceutical plants in Bulgaria's towns Dupnitsa, Troyan and Razgrad. Bulgaria became a major production unit for the company operations. Its European production plants are concentrated in the Balkans. In 2002 the company bought the Serbian drug manufacturer Zdravlje and the Icelandic Delta. In 2004 the company became a global player by obtaining the Turkish company Fako. Actavis entered the trade and marketing sector in Norway and Finland and bought the Polish distributor Biovena[41]. Actavis has branch offices for the sale of drugs in Poland, the Czech Republic, Slovakia

[39] *Capital*, "After the Merger of Big Sellers of Drugs: 12 percent for the Sopharma Group," Dessislava Nikolova, Issue 32, 2005
[40] An equivalent to the Federal Trade Commission in the United States.
[41] *Capital*, "Actavis Jumps into the High League with the Grace of a Gazelle," Margarita Vachkova, Issue 42, 2005

and Hungary in Eastern Europe.[42] Its sales in 2005 increased by over 30% reaching a total of 579 million euro and its profits went up by 26% to 81 million euro. It claimed 18% of the Bulgarian market as measured in value and 33% as measured in sales.[43]

The culmination of the international growth of Actavis was in 2005. In February it acquired the Indian clinical tests firm Lotus Laboratories and established a strategic alliance with the drug manufacturer Emcure Pharmaceuticals. In March the same year Actavis became the owner of Pharma Avalanche in the Czech Republic and Slovakia and made its first steps on the US market by buying out the private American company Amide for more than 500 million dollars. Actavis entered the Hungarian market through the purchase of the generic drug producer Keri Pharma. At the same time it appropriated one of the greatest distributors of medicines in Bulgaria Hygia.

The most notable deal in Actavis growth was the purchase of the American Alpharma and Amide Pharmaceuticals in 2005. The company became one of the leading producers of generic medicines (medicines not protected by a trademark) by obtaining the generic drug business of the American Alpharma for the sum of 810 million dollars. The total amount allocated by Actavis to financing the merger was 1.413 billion euro and the deal was to be finalized by the end of 2005.[44] Alpharma's division of generic drugs is the eighth largest producer in the USA and the fourth in Great Britain. It has over 2800 employees around the world. Its products are well known in Scandinavian countries, the Netherlands, Portugal, China and Indonesia. Its pretax profits are 60 million dollars for the first quarter of 2005. The merger will allow Actavis to use Alpharma's marketing and distribution network in 11 countries. Alpharma will retain the business with original drugs, substances, vitamins and veterinary antibiotics, which provide less than half of the yearly revenues of the company.

The purchase is an illustration of the world trend in the generic drug sector. In July of 2005 the Israeli-based world leader Teva Pharmaceutical acquired its American competitor Ivax Corp. for the sum of 7.4 billion dollars. Prior to this the Swiss Novartis acquired the German Hexal and Eon Labs for 8 billion dollars. The global trend towards consolidation is strong, as the generic drug sector is known for its low rate of return. Generic drugs become more and more attractive as the governments in many countries try to tighten up expenditures on healthcare and specialized medication. This ultimately intensifies competition among manufacturers who resort to integration in their attempt to optimise costs.

The new giant Actavis is expected to become one of the leaders in the sector. After the merger with the generic drug branch of Alpharma the company will have well over 600 ready medical products and 200 products under research. It will produce 24 billion tablets and capsules yearly and will have 10,000 employees in 32 countries around the world.

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[42] *Capital*, "Pliva – the New Temptation for Actavis on the Balkans," Margarita Vachkova, Issue 12, 2006
[43] *Capital Weekly*, "Bulgarian Biovet to Buy Actavis Production Units," Dessislava Nikolova, 5-11 March, 2005
[44] *Capital*, "Actavis Jumps into the High League with the Grace of a Gazelle," Margarita Vachkova, Issue 42, 2005

Actavis expects sales of 1.3 billion euro (1.56 billion dollars) in 2006 which is a tripling from 2004 when the sales equalled 511 million dollars. In the first half of 2005 Actavis' profit before taxes, interests and depreciation was 81.3 million euro and the turnover was 284.1 million euro.

In 2006 Actavis attempted to buy out the Croatian Pliva. The deal would create the third largest generic drug company in the world, which would be firmly established in Western and Central Europe and the Balkans. Actavis valued Pliva at 1.6 billion dollars, which exceeded its stock exchange value by 35%, but Pliva rejected the offer. The Croatian fiirm that has a history of 85 years is owned by the Croatian government (18%), the European Bank for Reconstruction and Development (5%) as well as institutional and private investors. Pliva's markets are Croatia, Poland, Russia, Germany, Spain, Italy, while Actavis is represented in the Balkans and the US. Pliva lost some of its profitable activities and incurred a net loss of 75.1 million dollars in 2005 compared to a profit of 127.5 million dollars in 2004. This came with a 6% increase in turnover to the amount of 1.2 billion dollars. Pliva also underwent restructuring and consolidation. It gave away its real estate business. Its patent over its most sold drug azithromycin would soon expire. In the bidding process for Pliva Actavis is expected to compete with the Czech Zentiva.[45]

Actavis intends to continue its growth and become a world leader. In 2005 it ranked 23rd among the Business Week's fastest growing companies in Europe. The ranking was formed on the basis of the speed with which companies created new jobs in the previous three years. Except new mergers the company aims limited growth through new product and new market development.

A major deal in Bulgaria and an attempt of the company to vertically integrate was the acquisition of one of the five biggest national distributors in the country Hygia. This was in response to Sopharma's obtaining the three major distributors Sanita Trading, Kaliman and Konsumpharm that formed the holding Sopharma Trading. It also followed the purchase of another leading distributor Lybra by the Pan-European distributor Phoenix and the control of Chaika Pharma, the third major drug manufacturer in Bulgaria, over one of the largest wholesalers Commercial Leage. Actavis reaction was an attempt to consolidate in a market moving toward greater concentration – in 2004 ten distributors provided 92% of medical drugs while in 2005 five firms supplied 85%[46].

The price of 33 million levs that Actavis was ready to pay for Hygia was not announced officially as the finalization of the deal was subject to the approval of the CPC. The approval would depend on whether Hygia had a monopoly position on the market. Hygia had been active since 1995 and had 9 storage houses in the country. It was a major supplier for the hospitals, the Ministry of Health and the National Health Case in public procurement. Its revenues in 2004 reached 83.8 million euro. The acquisition was expected to increase the total consolidated revenues for Actavis by 90-100 million euro.

[45] *Capital*, "Pliva – the New Temptation for Actavis on the Balkans," Margarita Vachkova, Issue 12, 2006
[46] *Capital*, "The Last Fortress before the Concentration of the Pharmaceutical Market Fell," Dessislava Nikolova, Issue 37, 2005

The financial support from Actavis could increase Hygia's growth and market share. In 2006 Hygia was said to plan purchasing the 30 pharmacies owned by Varnapharma Holding under the name Mareshki. The Mareshki pharmacy chain is an independent structure attracting the interest of companies from Russia and Israel. It is also popular for the sale of drugs at reduced prices, which has been sanctioned by the CPC[47].

Actavis and Sopharma have both been interested in buying Sting, an established independent distributor. Sting has a history of 13 years and holds 19% of the pharmaceutical market in the country. Sting has rejected an offer from the Pan-European distributor Phoenix. Sting's possible acceptance of the offer of some Bulgarian drug manufacturer would challenge the government's prohibition of vertical integration in the pharmaceutical sector.

In 2006 Actavis plans to produce 14 new products and introduce 9 new medicines on the Bulgarian market in the first months of the year. It will register in Bulgaria a part of the generic product portfolio of Alpharma which may reach 100 items. In 2005 the company registered 29 new products. The medicines that are produced abroad will only be packaged in the country. The company has decided to stop the production of five outdated Bulgarian drugs while an analgetic has been sold to Chaika Pharma. The total produce of the three production plants in Dupnitsa, Troyan and Razgrad includes 263 items in 660 forms. In 2005 the company imported some Icelandic food additives in the country. Bulgaria became the third largest market for the Icelandic group with sales of 25 million euro for the first half of 2005, which is 12% of the drug sales of the company.

IV. Potential for Empirical Research

In the theoretical part of the paper we have shown that profitability of own production (through vertically integrated structures) increases with asset specificity while that of procuring the products through the market (non-integrated structures) becomes less and less profitable the more specific the assets in question. In the context of Bulgarian pharmaceutical manufacturers and forward integration this finding translates into greater profitability from selling specific medicines carrying the brand name of the manufacturer through its own outlets. In this case the specific investment made by the company is in brand-name capital, representing a fifth type of asset specificity. At the same time generic drugs represent a form of non-specific assets that the firm manufactures under a common name. The firm would be likely to use an integrated sales force and own chains of pharmacies when it wants to better display, promote and sell its branded products. This is also in line with the fact that non-integrated pharmacy chains that carry a number of competitive products may not sell those branded drugs in the best way or may even refuse to sell products that go into direct competition with the products of other firms.

It is interesting then to see the effect of drug branding on the profitability of firms. We would also expect it to have an effect on the production and transaction costs of the firm, both of which would be likely to grow the more specific the drug is.

[47] *Capital*, "Actavis with a Record Number of New Drugs," Issue 5, 2006

$$\pi_i = \beta_o + \beta_1 D_i + \beta_2 C_i + \beta_3 D_i C_i + \varepsilon_i$$

We can hypothesize an estimation equation where profit is a function of drug branding and total costs such that

π_i = profit margin (unit profit) of the i^{th} drug;
D_i = 1 if branded drug, 0 if generic;
C_i = unit costs of producing the i^{th} drug.

Profit can be taken either as an absolute value, i.e., profit margin, or as a rate of return, that is, a percentage of the total revenue of the company.

We expect

$\beta_1 > 0$ or profit to be higher with drugs that carry the brand name of the company; this would also prove greater profitability of own production with asset specificity.

$\beta_2 < 0$ higher costs are expected to reduce profit; this would show the combined effect of production and transaction costs.

$\beta_3 < 0$ an interaction term coefficient that leads to a slope dummy; the implication is that profits would also fall if branded drugs incur higher costs.

To the above variables in the model we can add the sales of the i^{th} drug which changes the equation to

$$\pi_i = \beta_o + \beta_1 D_i + \beta_2 C_i + \beta_3 D_i C_i + \beta_4 S_i + \varepsilon_i$$

$S_i =$ sales of the i^{th} drug

where we hypothesize that $\beta_4 < 0$ since with greater sales profit margin is expected to fall.

To measure the effect of drug branding on the decision for forward integration we could use a simple contingency table and a chi-square test.

	$B_i = 0$ generic drug	$B_i = 1$ specific drug
$D_i = 0$ non-integrated sales (independent retailers)		
$D_i = 1$ vertical integration		

(own pharmacies)		

Furthermore, to incorporate other relevant variables we can resort to a binomial probability model. Since a most distinctive form of asset specificity in this case is brand-name capital it is interesting to see the effect of advertising as a form of investment in brand-name capital. Therefore,

$D_i = f(B_i, A_i)$ where

$D_i = 1$ if the pharmaceutical manufacturer is vertically integrated with a pharmacy, 0 otherwise;
$B_i = 1$ if the drug carries the brand name of the manufacturer, 0 if it is generic;
A_i = advertising spent on the i^{th} drug

Thus we have

$$\ln\left(\frac{D_i}{1-D_i}\right) = \beta_o + \beta_1 B_i + \beta_2 A_i + \varepsilon_i$$

We expect

$\beta_1 > 0$ shows that asset specificity in the form of brand name capital drives forward integration in the Bulgarian pharmaceutical sector;

$\beta_2 > 0$ higher advertising expenditures representing greater investment in brand-name capital also imply greater tendency for forward integration of drug manufacturers with pharmacies.

V. Discussion

IMS Health estimates that the small Bulgarian market with a volume of 600-700 million euro in 2005 has room only for 2-3 big structures for the distribution of medicines.[48] The mergers of drug sellers result from a strongly fragmented market. The advantage would perhaps go to the company that manages to attract one or more of the three independent distributors Sting, Biomeda and Tradeconsult. However, as some of the producers such as Actavis are well established globally, they could take advantage of international distribution and trade in order to achieve economies of scale. Vertical integration would allow firms to achieve such economies and at the same time reduce transaction costs. It should be noted that the high transaction costs pharmaceutical companies are faced with determines stronger integration processes. Being a low-trust economy Bulgaria determines a larger size of company operations. In such conditions manufacturers are vulnerable to the risks of market contracting and opportunism from distributors. It is clear

[48] *Capital*, "The Last Fortress before the Concentration of the Pharmaceutical Market Fell," Dessislava Nikolova, Issue 37, 2005

that vertical integration in the Bulgarian pharmaceutical sector is driven by the desire of manufacturers to control their products all along the marketing channel, which leads them to resort to complex legal and accounting manoeuvres through the mechanism of franchising.

Common ownership guarantees common supply, common advertising strategy, low cost and ultimately, low prices of medication. Vertically integrated structures also provide for full control over the financial flows and the movement of drugs along the distribution chain. Integration into wholesale and retail distribution would allow loyal competition and quality commitment. It has already been observed that to stay competitive small drug distributors violate proper commercial practices and resort to dumping, consumer deception and disloyal substitution of medicines.

The process of concentration also seems to follow world trends where both horizontal and vertical integration occur, i.e. mergers of producers as well as mergers of producers and distributors.[49] Except economies of scale and transaction cost economies consolidation is also driven by the need to generate substantial funds for expensive research in the field of genetics, molecular biology, pharmacology, medicine, etc. The world mergers in 1995 between British Glaxo and Wellcome into Glaxo-Wellcome and the Swiss Ciba and Sandoz into Novartis as well as the failed mergers between Smith Kline Beecham Plc. and American Home Products Co. and later Glaxo Wellcome proved that consolidation promises good results only when companies have similar corporate cultures and management styles.

Forward integration into wholesaling is especially important for products that need coordination of marketing and distribution. Such is the case of non-generic branded drugs, which require special ways of selling. For products and industries where product differentiation is essential the need for proper advertising as part of the promotion mix also determines ownership of wholesaling. The Bulgarian market for medicines clearly illustrates that. Forward integration into retailing extends the case of ownership of distribution where special handling and proper representation of the product continue to be important to the sales of the product. Products that are not long lasting often require such special handling. Some solutions and medications are nondurable. As was noted some medical products require special storage and handling. This also determines common ownership of assets – from the production stage to the sale to the final consumer. The specificity of medicines as intermediate products is very high. They are sophisticated products that require information, special demonstration or proper display. Due to the product specificity pharmaceutical firms are susceptible to various market risks. The need to provide detailed information to consumers also determines the ownership of retail stores by producers and a strongly forward integrated Bulgarian pharmaceutical sector. Furthermore, the freedom of distributors to use pricing strategies that do not quite match the pricing philosophy and do not meet the requirements of the producers is a mere illustration of the hold-up problem where the producers do not have much choice but to be dominated by distributors.

[49] In the Bulgarian case Biovet, a major producer of veterinary drugs, is a good example of a horizontally integrated structure pursuing rapid expansion.

Some economic theories charge vertical integration with the attempt to create monopoly and seek rents. Nothing could be further from the truth on the Bulgarian pharmaceutical market. The competition on the generic and the original drug market rules out monopoly of a producer, as there are several major producers and the sector rather resembles an oligopolistic industry. This excludes the possibility of monopoly-raised production prices. Rather it could be expected that efficiency and cost savings resulting from vertical integration would likely reduce prices of medicines. Efficiency would stem both from savings in production and transaction costs where we showed that high degree of asset specificity, in this case the product specificity of medicines, favors internal rather than market contracting.

The mechanism of public procurement in Bulgarian healthcare authorizes the Ministry of Health and the Health Case, the central health insurance authority in Bulgaria, to buy medical products for hospitals and clinics. It could be predicted that this process will greatly be facilitated if these central authorities negotiate with integrated companies that control their financial and commodity flows completely and not with multiple layers of distributors. A smooth process of negotiation would be beneficial not only for the authorities but for patients as a whole.

While there are generally efficiencies achieved through greater economies of scale and scope resulting from mergers in the Bulgarian pharmaceutical sector, the major driving force behind those mergers seem to be the high asset specificity of products and the sizable transaction costs faced by firms in a low-trust culture such as the Bulgarian. There are transaction cost explanations to the recent developments in the Bulgarian drug industry that Bulgarian economists and policy makers have not accounted for. As a low-trust, high-transaction cost economy, the Bulgarian economy determines that a larger scale of operations in the pharmaceutical sector be internalised within firms rather than carried out by the market.