

**CORPORATE GOVERNANCE
IN A TRANSITION ECONOMY: BUSINESS GROUPS IN RUSSIA**

by

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Abstract

This study is an empirical examination of the impact of business group (BG) affiliation on various measures of firm performance in a transition economy, Russia. The Russian economy provides a unique opportunity for testing of the effects of BG affiliation, which is important for both mature markets and developing economies. A panel sample of around 1000 companies was constructed for the period 1998 to 2001, based on information obtained from a large commercial database, Amadeus. For the purpose of this study, all firms are divided into two main subgroups: oligarchic business groups (OBGs - economically powerful private business groups with either horizontal or vertical control structures and concentrated ownership in the hands of few individuals) and non-oligarchic firms. A measure for OBGs is created and tested for reliability and validity and a structural model for OBGs is also developed. This measure is then used as a determinant of three major performance measures: profitability, investment and productivity. The results indicate that OBG affiliation is positively but weakly related to firm profitability and productivity. However, the study also finds a redistribution effect of OBGs on their affiliated member firms' profits and debts. This redistribution effect may suggest a stabilization role of BGs in the absence of appropriate market institutions, but might also suggest an opportunistic value transfer. Empirical support for a corporate version of the Laffer curve is also found. That is, relative to their unaffiliated counterparts, OBG affiliated firms have a tendency to outperform their un-affiliated counterparts in terms of taxes paid to state and local budgets, provided that tax rates are lower and tax law enforcement is stronger.

Key words: Corporate Governance; Business Groups; Transition Economy; Econometric Methods.

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Chapter One

Introduction to the Research Topic and the Dissertation Structure

"...Russia has a strategic goal — to become a country that makes competitive goods and renders competitive service. All our efforts are committed to this goal. We understand that we have to solve questions pertaining to the protection of owner's rights and the improvement of corporate governance and financial transparency in business in order to be integrated into world capital markets."

The Russian president's speech at
The World Economic Forum in
Moscow (10/30/2001)¹

In November 2002, the European Union (EU) acknowledged the Russian Federation as a fully-fledged market economy. According to the United Nations Economic Commission for Europe (UNECE), *good governance* is an important element in economic growth. This widely shared belief is based on extensive evidence from both academic and non-academic sources. In contrast, poor governance and slow economic development appear to be mutually reinforcing.²

The increased emphasis on governance issues, and especially corporate governance issues, in the last five years has resulted in profound changes in the Russian corporate governance landscape. It has also attracted the attention of academic and business practitioners to corporate governance processes in Russia. The increased interest in this subject is based on

¹ Cited from Goetzman, Spiegel and Ukhov, 2003. Modeling and Measuring Russian Corporate Governance: The Case of the Russian Preferred and Common Shares. Yale ICF Working Paper, 03 – 25, p. 1.

² Expert Meeting for Good Governance for SME, UNECE, 2004. Info Notice No 1, p. 1.

two main factors: 1) Russia provides a natural laboratory for testing the effects of corporate governance that may be non-testable in developed markets; 2) Corporate governance structures in Russia exhibit many similarities to the corporate governance structures in *both* developing and developed economies all over the globe.

These two factors are most evident if one takes business groups as an example. Business groups are seen to be playing an increasingly important role in Russia. Business groups also play a very important role in developing economies (e.g., India, Korea, Chile and China) and in Japan. Large business groups in Russia are characterized by significant ownership concentration. Issues related to ownership concentration and control are also among the very important issues in mature markets.

The phenomenon of business groups, including the proper definition and the effects of business groups, has been a subject for a debate in academic literature for a number of decades. Business groups are seen to play a significant role in many countries in the world, including both developing and developed economies. Yet, in spite of their important role, there has been no consensus reached, either on the proper way to define them or on their effects.

In the former case, the question of what business groups are and why they form has been given different answers depending on the school of thought. For example, general economic theory tends to define business groups differently than sociology does (e.g., Leff, 1976 and Granovetter, 1994). The reasons for business group formation are also seen

differently by the different disciplines. From an economic theory point of view, business groups form in order to compensate for market imperfections. However, sociology tends to regard these reasons as too narrow, as they do not take into account social, cultural and historical factors and do not differentiate between the different types of business groups based on these factors.

Since there is a lot of controversy surrounding the effects of business groups on the economy in mature markets (as is pointed out later in this study), studies of business groups in other countries can serve to resolve ambiguity regarding the effects of business groups.

In particular, countries like Russia that are generally characterized as having an economy in the transitional stage can serve this purpose. The process of transition makes many effects of business groups more pronounced and testable. Due to this, Russia is now often seen as a natural candidate for analyzing the role of business groups (e.g., Perotti and Gelfer, 2001) and for testing the different corporate governance effects (e.g., Black, 2001). Among the most commonly cited reasons are the following:

1. An historical reliance on implicit contracting;
2. The oligopolistic structure of its industry;
3. The segmented nature of information flows;
4. An undeveloped capital market;
5. Weak law-enforcement and an undeveloped legal system.

There are apparent similarities between the Russian economy and developing economies. The Russian market is in the process of development. It is still undeveloped in its capital market, legal system and other relevant market institutions. From a social point of view, Russian culture exhibits some collectivist features, with a reliance on implicit contracting and with strong social ties among members of social groups. In this sense, Russian business groups are similar in their role and structure to business groups in developing economies and in Japan.

However, there are profound differences as well. The first and most important difference is the level of economic development (high industrial development, a highly educated labor force, etc.), which brings the Russian economy much closer to the economies of developed countries. In other words, Russia is an emerging market, but it is not a developing economy. From this perspective, it is plausible to suggest that the effects of business groups in Russia should exhibit similarities to the effects of business groups in *both* developing and developed economies.

Therefore, it is very important to study the influence of business groups on economic performance in Russia. This is the purpose of this study. Using a unique database, this study will examine the influence of business group affiliation on a broad range of economic performance indicators. Even though there has been an increased attention to the role of business groups in Russia in recent years (e.g., Perotti and Gelfer, 2001 on financial/industrial groups and investment; Black, 2001 on corporate governance and firm value; Desai, Dyck and Zingales, 2003 on corporate governance and taxation;

Gorodnichenko and Grygorenko, 2004 on the productivity of oligarchs in Ukraine; Earle, Estrin and Leshchenko, 1996 and Estrin, 2002 on corporate governance, enterprise behavior and competition; and some other general studies on corporate governance issues in Russia), surprisingly very little has been done to study business groups in a systematic manner. This study aims to fill this gap.

This study builds on the existing research on business group affiliation, by developing a family of hypotheses with respect to the influence of business group affiliation on corporate performance, the influence of business group affiliation on the economy of the state (e.g., taxation) and other important issues. This study is predominantly an empirical investigation based on the econometric analysis of a sample created from a unique, large and reliable database for testing developed hypotheses within wide a range of context effects (government ownership, government regulations, time, etc.).

In particular, this study tests the effects of group and subgroup affiliation on performance (profitability, productivity and investment) using a broad range of performance measures (return on assets, change in fixed assets, value added, taxes paid, etc.) within different times and context effects, (including industry effects and external shocks, such as the financial crisis in Russia).

In terms of the effects of business groups in Russia on social well-being, this study looks at the performance of business groups in comparison to other business structures in terms of tax revenues generated. In particular, this study will test the corporate version of the

“Laffer curve” (similar to Desai, Dyck and Zingales, 2003) at the firm level. The test of the corporate version of the Laffer curve will evaluate the influence of tax enforcement policies and the optimality of taxation system with respect to business groups. This issue has important policy implications, as a lot of controversy in recent years has surrounded whether business groups increase or reduce social well-being and businesses’ general ability to “give back” to society. This is especially true with respect to Russia and other countries which were formerly part of the Soviet Union after the decade of highly controversial privatization and the ensuing economic slowdown.

In addition to testing for the corporate Laffer curve in Russia, this study also contributed to the literature on business groups by examining the relationship between business group affiliation and firm profitability. This is important, since the effect of group affiliation on profitability is not unambiguous — some studies have found negative or neutral effects in mature markets and positive effects in developing countries (see Montgomery, 1994 and Khanna, 2000).

As well, this study will test the redistribution effects of business groups. Previous research in the area has not looked at business groups’ performance in Russia (or in similar countries) from this perspective. For example, in the study by Gorodnichenko and Grygorenko (2004), certain propositions with respect to the profitability (but not with respect to redistribution of profit) of business groups in Ukraine were developed, but they have not been tested empirically. However, the redistribution effect of business groups on

profits has been confirmed in some countries (e.g., Japan, Gedajlovic and Shapiro, 2002; Lincoln and Gerlach, 2004).

This study will also test for the endogeneity relationship between a firm's performance and business group affiliation. As was noted in some previous studies (e.g., Chang, 2003; Black, Jang and Kim, 2004), the relationship between performance (e.g. profitability) and business group affiliation is not clear cut. Some studies assume that the causality effects go from business group affiliation to profitability and not the other way around. This study therefore includes additional tests to control for a possible endogeneity problem. Previous research on business groups in Russia has not looked at this possibility (one exception being Gorodnichenko and Grygorenko, 2004). This study controls for possible endogeneity problems with respect to business group affiliation and two main performance outcomes: profitability and productivity.

The study by Perotti and Gelfer (2001) on the investment behavior of business groups in Russia has found that certain business groups tend to allocate capital better than others, and that certain business groups tend to invest more in fixed assets than others. However, that study was performed only on companies that trade their shares on the public stock exchange. As the authors admit, the secondary market for corporate shares is small and underdeveloped in Russia; their sample was thus not representative of Russian companies and business groups. This study uses a much larger and therefore more representative sample of Russian companies, being obtained from the Amadeus database provided by BUREAU van DIJK. Amadeus is a very large commercial database that contains

information on ownership and performance indicators of major companies around the world. The sample of Russian companies selected for this study contains a three year panel of 977 companies (in comparison to the two year panel of around 200 companies in Perotti and Gelfer, 2001). Certain propositions developed in the study by Perotti and Gelfer (2001) are tested here for generalizability of the results, - such as investment in fixed assets, accessibility of external financing and sources of investment financing for larger business groups. Other propositions (e.g. redistribution effects of business group's affiliation on debt) are new.

Propositions with respect to the productivity of business groups in Russia are also included in this study. In the related study looking at the behavior of business groups in Ukraine, propositions with respect to the productivity-enhancing role of business groups were developed, but they have not been tested empirically. As was noted earlier, there is no consensus on the role of business groups in terms of productivity. The predominant point of view is that in developing countries business groups are more productive than their unaffiliated counterparts - , just as they excel in many other aspects: - (e.g., Khanna, 2000). In mature markets, the predominant point of view is the opposite: business groups are less productive than their unaffiliated counterparts. However, in this latter case, there is still a lot of controversy.

This study also suggests a categorization of business groups operating in Russia different from the categories used previously (e.g., Perotti and Gelfer, 2001). In particular, for the purposes of this study, the firms that operate in Russia were divided into two main

subgroups: oligarchic business groups (OBGs) and non-oligarchic firms. The definition of oligarchic business groups is provided and a corresponding measure of OBGs is developed. The proposed definition of oligarchic business groups is in agreement with the definitions of business groups used in previous studies but it provides an additional insight. This definition is based on a combination of the definitions of business groups from economic theory and from sociology noted earlier in this study.

The categorization of firms operating in Russia into two main subgroups has the advantage of being easily operationalized. It allows for the possibility of testing the validity of the developed measure of oligarchic business groups based on available data. Formal tests of the validity and reliability of this measure will be given in later chapters. A structural model for oligarchic business groups is also developed.

The rest of the dissertation is organized as follows. Chapter 2 provides a general overview of the relevant theoretical and empirical findings with respect to business groups in mature markets and developing economies. Chapter 3 gives an overview of business groups in Russia, outlines special features of Russian business groups, shows the importance of Russia for the purpose of business group examination, and defines oligarchic business groups and non-oligarchic firms. The main research goal of this study, the research hypotheses, the research method and a description of the data are outlined in Chapter 4. Chapter 5 develops tests for the validity and reliability of the proposed measure for oligarchic business groups (developed in chapter three), including structural equation modeling. The results of hypothesis testing with respect to profitability, investment and

productivity (including the corporate version of the Laffer curve) are presented in Chapters 6, 7 and 8 respectively. The last chapter summarizes main ideas and results.

Chapter Two

Business Groups: an Overview of Theory and Empirical Findings

2.1. Introduction

The phenomenon of business groups, including their proper definition and effects has been a subject of debate for a number of decades. Business groups are seen to play a significant role in many countries in the world, including both developing and developed economies. Yet, in spite of their important role, there has been no consensus reached, either on the proper way to define them or on their effects.

For example, general economic theory tends to define business groups differently than does sociology (e.g., Leff, 1976 and Granovetter, 1994). The reasons for business group formation are also seen differently by the different disciplines. From an economic theory point of view, business groups form in order to compensate for market imperfections. However, sociology tends to regard these reasons as too narrow, as they do not take into account social, cultural and historical factors and do not differentiate between the different types of business groups based on these factors.

There is also no consensus on the role of business groups at the micro level, with respect to the member firms, and on the macro level with respect to their impact on economic development at the national level. Some scholars find that business groups are more welfare-increasing than otherwise, while others regard the effects of business groups as

more welfare-reducing. There is also a clear difference in views on the role of business groups with respect to a country and its level of economic development.

This chapter looks at the different ways of defining business groups, as well as reasons for their formation and the effects of business groups on the micro and macro levels with respect to the economic development of the country within which the group operates.

2.2. Definition of a Business Group

According to the early work by Leff (1976, 1978), a business group is a group of companies that does business in different markets under a common administrative or financial control and its members are linked by relationship of interpersonal trust, and similar personal, ethical or commercial background:

A Group is a multienterprise firm that draws its capital from sources extending beyond a single nuclear family: e.g., from people linked by communal, tribal, ethnic, or personal relations of trust and mutual confidence. In addition, somewhat like the zaibatsu in pre - World II Japan, the Groups invest and produce in several product markets rather than in a single product line. For example, a Group's single decision-making center may encompass activities ranging as widely as textiles, cement, fabricated steel, zinc mining, and cattle ranching. The largest Groups also possess their own banks...and perform the principal functions of a capital market...The Groups in fact constitute a mechanism for mobilizing and pooling entrepreneurship and technical expertise as well as capital in large-scale, modern activities (Leff, 1976, p.98 -99).

In the economics literature groups are often defined as economic units linked by the pyramidal structure of ownership relationships (Goto, 1982; Wolfenzon, 1999, Caves, 1989). The economics literature generally builds on the earlier definition of business groups given by Leff (1976) where the main characteristics of business groups and their activities are outlined. According to this definition, the main reason for a business group's

activities is a response to market imperfections in one or another way. Or, as Caves (1989) pointed out, business groups form in response to transaction costs and agency problems.

Economic theory does not distinguish between market failures in the undeveloped or developed countries under this definition. However, recent research (see Khanna, 2000 for an overview) in the field suggests that there is more to business groups than just a collection of companies linked together by hierarchically shaped ownership relationships formed in response to market imperfections. In particular sociology and economic sociology have somewhat different way of defining business groups (e.g. Granovetter, 1994).

Granovetter (1994) challenges the definition of groups given in the economics literature. In particular, he argues that the definition of business groups following on the earlier work by Leff (1976) is satisfactory when it is applied to the case of undeveloped economies. But economic theory is weak on the point of defining business groups and their characteristics and roles in developed countries. According to a sociological point of view, the definition of business groups given in the economics literature is too narrow and cannot be generalized to fit every situation of existence and performance of such groups.

According to Granovetter (1994), social and historical reasons play important roles in definition of business groups. Briefly, a business group is a collection of companies bound together in some formal or informal ways (Granovetter, 1994). Firms bound merely by short-term strategic alliances are excluded from this definition. Under this definition

conglomerate firms, in which a single firm has diversified into many industries is a marginal case of a business group. Conglomerates in North America fit into this category. The common parent owns the subsidiaries but only a few operational and personal ties exist between the parent and the subsidiary. However, in the business groups that operate in other parts of the world, one can generally find strong interpersonal and operational ties among members of the group (Strachan, 1976). Some conglomerates are unstable and function merely as loose industry alliances (e.g., some business groups in Russia); others are very stable, such as Korean *chaebol*. In a stable business group the family typically owns the group of companies and keeps them together. In this case personnel and resources can be shifted among the member firms as needed.

According to Strachan (1976), there are three main characteristics that distinguish business groups from other types of associations. The first one is a great diversity of enterprise in a group. The second is pluralism, where the group consists of a coalition of several wealthy members. And third is the loyalty and trust among members of the group.

For the purposes of this study a combined definition of a business group is adopted. Taking as a basis the definition of a business group proposed by Leff (1976) and the definition of business groups given in Granovetter (1994), and after closely examining both approaches to defining business groups, one can come to the conclusion that the difference between them is marginal. In particular, the definition proposed by Leff (1976) appears to be quite broad as it includes not only economic characteristics but also social and even psychological characteristics. It also appears to be more applicable to the purposes of this

study. However, the importance of social ties, historical reasons, trust, loyalty, as well as the different 'shapes and forms' that business groups can take (from conglomerates to *chaebol*), etc. in defining business groups from sociological perspective is also taken into consideration.

2.2.1. Why Business Groups Form

There is a wide body of literature proposing to explain the reasons for formation of business groups starting with earlier work of Coase (1937), who largely developed the general theory of firm formation and existence in the market economy.

According to Coase, economic theory suffered from a failure to explain the reasons for a firm's existence. According to general economic theory of a market economy, "the normal economic system works by itself...supply is adjusted to demand, and production to consumption, by a process that is automatic, elastic and responsive", Salter³. However, as Coase pointed out, this definition is very incomplete and within the firm this description does not fit at all, as it does not explain, why, if coordination of exchange and production on the market is done solely by the price mechanism, the organizations exist.

Yet, having regard to the fact that if production is regulated by price movements, production could be carried on without any organization at all, well might we ask, why is there any organization?...The main reason why it is profitable to establish a firm would seem to be that there is a cost of using price mechanism. Coase (1937), p. 388.

³ As cited in Coase, "The Nature of the Firm", 1937.

As Granovetter (1994), p. 454 pointed out:

The next question to ask, that is similar to Coase's, but takes firms rather than individuals as the object of inquiry, asking why it is that in every known capitalist economy, firms do not conduct business as isolated units, but rather form cooperative relations with other firms, with legal and social boundaries of variable clarity around such relationships.

Transaction costs, according to Coase, are the main reason for formation and existence of the firm in the market economy. The same idea of lowering the transaction costs and avoiding imperfections in the market economy has been also stated as one of the main reasons for not just a single firm's existence but for existence of a group of firms under the same ownership (e.g. Williamson 1975, 1985; Caves, 1989).

In the classic work "The Nature of the Firm" which has served as a road map for many economic and business scholars in the decades following, Coase also comments on the question of a firm's scale and scope. Though once again he was limiting his attention to the case, of a single firm, his arguments remain applicable to a situation where we have to consider a group of firms under common ownership. The firms gets larger only up to the point when transaction costs carried out within the firm are lower than those transactions carried out by means of market mechanism.⁴

⁴ This is important, since the business groups are usually large firms.

From the transaction costs point of view, the reasons for business groups' formation could be explained only by the necessity to lower the transaction costs to an optimal point. However, the quantity of evidences shows that firms tend to diversify their operations and to exist in the form of business groups when it is not justified from the efficiency point of view (Granovetter, 1994). There have been attempts to explain reasons for the firm's diversification from different angles. They include such reasons as increased profitability due to excessive market power, agency costs view and resource view (Granovetter, 1994. Also see Montgomery, 1994 for a survey).

Conglomerates diversify in order to gain market power over undiversified firms and not to become efficient (Edwards, 1955; Hill 1985). The large diversified conglomerates are assumed to use their profits from other segments in order to subsidize predatory pricing in a given segment; the scope and character of activities in the market also contribute to the degree of conglomerates' excessive market power; conglomerates can exhibit collusive behavior with the aim to block entry for new arrivals; to compete less vigorously; to buy from each other or from their own members, etc.

According to the resource views, firms diversify because of excess capacity of their assets and if these assets cannot be effectively sold on the market (e.g. Penrose, 1959; Teece, 1980, 1982). The contracting problems involved in transfer of intangible assets, such as brand names, "good will", etc. make the transfer of these assets by means of the market mechanism difficult (Wernfelt, 1988; Caves, 1982).

According to the agency theory view (Berle and Means, 1932), separation of principals and agents (owners and managers) might be a primary reason for a firm's diversification. In particular, corporate assets may be used in the manner that benefits more the agents than the principals (Morck, Shleifer and Vishny, 1988; Mueller, 1969, 1972; Jensen, 1986). Mergers and acquisitions are one of the ways managers can create a diversified conglomerate and avoid paying dividends to shareholders. According to the life cycle theory of a firm, a firm can become a diversified conglomerate at the later stages of its life cycle when new and promising opportunities for its own growth become scarce. Managers can be interested in building a diversified conglomerate to create a demand for their own organizational and managerial skills and for improving their personal employment situation including diversification of their own employment risk (Shleifer and Vishny, 1989; Amihud and Lev, 1981).

2.2.2. Ambiguous Effects of Business Groups

With respect to the effect of business groups it is common to consider two different scenarios: A) The role of business groups in mature markets; and B) The role of business groups in developing economies.

2.3. Empirical Evidence on the Role of Business Groups in Mature Markets

A. Studies on business groups in mature markets reflect an increasingly skeptical view. It has been shown that big and diversified conglomerates can lead to conflict between managers and investors (Jensen, 1986); to inefficient allocation of resources (Shin and Stulz, 1998; Rajan et al., 1998; Scharfstein and Stein, 1997); to conflict between insiders

and outsiders; to negative effect of pyramidal ownership structure, Wolfenzon (1999); exploitation of minority investors, Bebchuk et al. (1999), decreased efficiency of financial markets in 27 countries, La Porta et al. (1999); to lower growth and Canadian pyramids Morck et al. (1999); to destruction of firm value (Lang and Stulz, 1995; Montgomery, 1994); to rent-seeking behavior (Fisman, 1998); to monopoly market power including multimarket collusion (Bernheim and Whinston, 1990; Tirole, 1991);, and to prevention of entry (mixed evidence in Japan Lawrence, 1991; Saxonhouse, 1993; but not in Russia, Broadman, 2003).

According to the agency theory and in particular to the free cash flow hypothesis (Jensen, 1986), separation of ownership rights can create a potential for opportunistic behavior of managers. More recent studies (e.g. Fisman, 1998) on the rent-seeking behavior of managers are generally supportive of this point of view. In this case managers tend to pursue the projects that will benefit their personal well-being and not necessarily the well-being of shareholders. For example, in terms of investment, projects with negative NPV but that have a potential value for the manager will be given top priority. This creates potential for a conflict between managers and investors and can also lead to the destruction of firm value.

Diversification as a result of investments into related and unrelated areas of a firm's business activity can create the potential for a conflict between managers and investors. A brief summary of different effects of conglomerate diversification in mature markets is given below.

2.3.1. Effects on Performance

The effect of firm diversification on performance in mature markets was found to be either negative or neutral (e.g. Rhoades, 1974; Utton, 1977; Montgomery, 1985; Montgomery and Wernerfelt, 1988; Palepu, 1985). Negative effect of diversification on performance was found also in cross-country studies in some countries (Gedajlovic and Shapiro, 1998). In most of these studies performance was measured using accounting performance measures such as ROI, ROA and ROE. Financial performance and firm value was measured using Tobin's q. However, the effect of diversification was found to be positive on average for those firms that tended to diversify their activities around their core capability, rather than those that tended to diversify in unrelated areas of business (Rumelt, 1982; Christensen and Montgomery, 1981; Varadarajan and Ramanujam, 1987).

The effect of a large firm's diversification on industry concentration was found negative in concentrated industries and positive in unconcentrated (Caves, 1981). The effect of a firm's diversification on productivity was also not found to be positive (e.g. Lichtenberg, 1992). According to the majority of studies, the most diversified firms have the lowest productivity in their plants. The post-merger performance of diversified firms was found to be in decline in comparison to the pre-merger performance (e.g. Ravenscraft and Scherer, 1987).

According to these studies, economic theory fails to explain the reason for firms' diversification based on the increased market power including multitasked collusion, as

predicted by the market power point of view (e.g. Bernheim and Whinston, 1990; Tirole, 1991). At the same time findings on prevention of entry of new rivals by big diversified conglomerates gave mixed evidence (e.g. Lawrence, 1991; Saxonhouse, 1993). According to earlier view (e.g. Montgomery, 1994), the agency theory approach and the resource view can provide a better explanation as to why large firms tend to diversify into different industries when the effect on profitability, productivity and investment is not positive. According to the agency theory, management might be willing to diversify in order to pursue its own goals and not necessarily the shareholders' goals.

2.3.2. Diversification Discount

More recently, numerous studies have also found that diversified firms on average trade at a discount in comparison to their undiversified counterparts. These studies were performed on the aggregate level with respect to different industries, including international and US markets (e.g. Berger and Ofek, 1995; Lang and Stulz, 1994; Lamont and Polk, 2001; Lins and Servaes, 1999, 2002; Doukas, Holmen and Travlos, 2002).

Recent academic findings on the impact of diversification on a firm's cash flow and excess value have found that bidders in unrelated areas of acquisitions experience larger valuation discount and larger drop in excess cash flows than the firms that acquire other businesses in related areas (Doukas and Kan, 2004). At the same time, findings by Villalonga (2004) using recent econometric developments have concluded that, on average, diversification does not destroy firm value. These findings are consistent with some earlier evidence as well (e.g. Campa and Kedia, 2002; Graham, Lemmon and Wolf, 2002).

2.3.3. Allocation of Resources and Internal Capital Market

Since in many cases firms diversify in different industries and areas of business by means of mergers and acquisitions, the academic literature has focused its attention on analyzing the effects of mergers and acquisitions on firms' performance and market value. According to the theory of free cash flow, Jensen (1986), management can pursue projects with negative NPV to achieve its own goals. Also some studies indicated that management-controlled firms are engaged on average in more conglomerate acquisitions than owner-controlled firms (Amihud and Lev, 1981). According to most studies, the free cash flow hypothesis has found empirical support. For example, it was found that the returns of the targeted firm were negatively related to the acquirer's free cash flows (e.g. Lang, Stulz and Walking, 1991; Kaplan and Weisbach, 1992).

According to a study by Shin and Stulz (1998), investment by a segment of a diversified firm depends on the firm's other segments cash flows. The sensitivity of a segment's investment to the cash flow of other segments does not depend on whether its investment opportunities are better than those of the firm's other segments. Based on these findings, Shin and Stulz (1998) conclude that the internal capital markets of big diversified conglomerates are not efficient. If efficiency of internal capital markets is the case, projects with higher NPV would be given the first priority over all others. However, this is often not the case, according to Shin and Stulz (1998).

2.3.4. Effects on Economic Development

Studies on the impact of big diversified conglomerates on economic efficiency and development, including the economy as a whole and the efficiency of capital markets, have confirmed the decreased efficiency of financial markets in 27 countries, La Porta et al. (1999) and a positive relationship between lower growth and Canadian pyramids, Morck et al. (1999).

In summary, the outcome of diversification of large conglomerates has been a subject for debate in academic literature for a number of years. The skeptical view of diversified conglomerates and business groups in mature markets has become increasingly more pronounced.

2.4. Empirical Evidence on the Role of Business Groups in Developing Economies

B. Studies of business groups in developing economies and Japan show a somewhat different picture. Conclusions on the effects of group affiliation on performance (Khanna and Rivkin, 1999, 2001; Chang and Choi, 1988); on efficiency and development (Leff, 1976, 1978; Chang and Hong, 1999; Khanna and Rivkin, 1999; Khanna and Palepu, 1999; Fisman and Khanna, 1998, 2003); on internal capital market operation (Aoki, 1984, 1990; Hoshi et al., 1991; Lincoln et al., 1996); on political lobbying (White, 1974; Strachan, 1976; Schwartz, 1994) are mixed.

2.4.1. Effect of Business Groups on Performance

The most well-known study estimating performance effects of business groups in developing economies (Khanna and Rivkin, 1999, 2001) examines the effect of group affiliation on a firm's profitability in 14 developing economies: Argentina, Brazil, Chile,

India, Indonesia, Israel, Mexico, Peru, the Philippines, South Africa, South Korea, Taiwan, Thailand, and Turkey. This study shows that group affiliation affects a firm's profitability in 12 markets and in several of the examined markets this effect is positive.

A similar conclusion was made based on analysis of group affiliation on a firm's profitability of diversified Indian business groups (Khanna and Palepu, 2000) and the four largest Korean *chaebol* (Chang and Choi, 1988). The affiliation with diversified business groups in India and membership in one of the four Korean *chaebol*, on average benefited the member firms more in terms of profitability than their unaffiliated counterparts.

Japanese business groups (BGs) appear to have lower profit rates than non-affiliated companies but they are more stable over time (Caves and Uekusa, 1976; Lincoln et al., 1996). In general, while affiliation with groups in Japan does not bring member firms up to the highest level in terms of profitability, group affiliation is beneficial for them as well. The stabilization effect of group affiliation allows the weaker but potentially profitable firms to survive through economic slowdowns and hardships, due to redistribution effects of profits from other members (Gedajlovic and Shapiro, 2002; Lincoln and Gerlach, 2004).

2.4.2. Effect of Business Groups on Efficiency and Development

The positive effects of business groups on development due to alleviation of market failures were first suggested by Leff (1976, 1978). In particular, he pointed out that since in the undeveloped countries business groups are very common, they must play a positive role in the absence of other mechanism that might facilitate economic development. A general point of view in economics is that groups emerge in response to market imperfections. In

the case where economic development is a concern, the governments in most undeveloped countries lack sufficient resources to enhance economic development in different regions of their countries. In this case business groups that are capable of accumulating sufficient resources might act as ‘substitutes’ for the role of the government in facilitation of economic development. Even when BGs invest in some non-productive assets to diversify their portfolio holdings (such as urban land and residential real estate), they ultimately serve the goal of facilitation of economic development. In this case development is related to the faster growth of urban areas in agricultural countries, and the development of related urban business activities and branches of industry such as manufacturing.

Empirical findings are generally supportive of the point of view expressed earlier by Leff (1976, 1978) that business groups are facilitating the development in many countries and thus are generally beneficial for their economies. For example, according to Chang and Hong (1999) Korean *chaebol* provide value-enhancing internal product and labor market; Khanna and Palepu (1999) find that indices constructed for capital, labor and product markets intermediation are positively correlated with accounting and stock market performance for Chilean and Indian business groups. Fisman and Khanna (1998, 2003) find that group-affiliated firms in India are more likely to locate in less-developed states than non-affiliated firms, thus increasing social and economic development of the state, and that they also serve to increase a cross-border capital and technology transfer. Formation of business groups in China in the 1980s allowed firms to increase financial performance and productivity (Keister, 1998).

Regarding political connections, Fisman (1998) finds empirical evidence from Indonesia that demonstrated a sharp decrease of market value of the firms closely related to the dictator in the event of dictator's death. Groups were also found to establish political connections in Pakistan (White, 1974), Latin America (Strachan, 1976), and Indonesia (Shwartz, 1994).

2.4.3. Internal Capital Market

From the general economic theory point of view, business groups form in response to market imperfections (Caves, 1982). For example when the external capital market is not an efficient mean of raising resources for projects' financing or when the external capital market is small and underdeveloped, business groups come into play and might act as substitutes for the role normally played by such external capital markets as stock exchanges and banks. In fact, studies have indicated that in many developing countries the bank is at the heart of a business group. The most well-known and well-studied case of business groups with the bank at its core is the case of Japanese groups.

Empirical findings on the role of internal capital markets within business groups and in particular on the role of banks, shows that the substitution hypothesis holds. For example, according to Aoki (1984, 1990), Hoshi et al. (1991), Lincoln et al. (1996), and Lincoln and Gerlach (2004) an internal capital market was created within Japanese business groups keiretsu to substitute for an external domestic capital market.

2.5. Conclusion

As there is no single and 'easy' way to define business groups and there is no consensus on definitions of business groups, it appears that the combined definition that includes

interpretations from economics as well as from sociology (since these two disciplines represent the area where main stream research on business groups is performed) should be adopted for the purposes of further research. In the case of a combined definition the complex nature of business groups is taken into account and economic, cultural, historical and social factors are given proper attention.

With respect to the effects of business groups at the micro and macro level there is no general consensus either. However it is safe to say that most of today's scholars tend to agree that group affiliation is more welfare-reducing in developed economies and more welfare-increasing in developing countries (e.g. Khanna, 2000). In the former case the negative effects of group formation due to market imperfections outweigh positive effects, while in the latter case a group's activities in response to market failures and government inability to facilitate development outweigh negative effects.

Chapter Three

Business Groups in Russia

3.1. Introduction

Since there is a great deal of controversy around the effects of business groups on the economy in mature markets, studies of business groups in other countries can serve to resolve ambiguity regarding the effects of business groups.

In particular, countries like Russia that are generally characterized as having an economy in the transitional stage, can serve this purpose. The process of transition makes many effects of business groups more pronounced and testable. Due to this, Russia is now often seen as a natural candidate for analyzing the role of business groups (e.g., Perotti and Gelfer, 2001) and for testing for different corporate governance effects (e.g., Black, 2001). Among the most commonly cited reasons are the following:

1. A historical reliance on implicit contracting;
2. The oligopolistic structure of its industry;
3. The segmented nature of information flows;
4. An undeveloped capital market;
5. Weak law-enforcement and an undeveloped legal system.

The first factor, the historical reliance on implicit contracting, makes the existence of business groups justifiable from the point of view of economics and sociology (as was discussed in the previous chapter). For example, implicit contracting helps to avoid transaction costs and allows the achievement of performance goals of the business unit in

the case of absence of market institutions that enforce contracts. Implicit contracting requires reliance on the interpersonal trust and loyalty among business group members. This last factor is an important element of the Russian culture.

The oligopolistic structure of industry in Russia makes the formation of business groups easy and natural, as the industries have been historically dominated by a few big companies. It is easy for the companies to form some alliances and to engage in other forms of collusive behavior (as suggested by the market power point of view on the reasons of business group formation). Even though the market power view has not been supported by the majority of empirical findings in the literature to date, Russia can be used to test the existence of these effects.

The segmented nature of information flows presents a general problem with respect to the performance of transactions on the market. To improve on this aspect of market failure in the transitional economy, business units might come together to form a business group to save costs related to information asymmetry and lack of proper information. This would support a hypothesis about business groups' formation in the face of market inefficiencies and transaction costs theory.

The next factor that is related to the undeveloped external capital market makes it necessary to perform investment decisions based on the internal sources of the firm. In this case formation of the internal capital market within a business group with the bank at the heart

of it is the natural responses to the absence of ability to raise funds through external sources such as banks and stock exchanges.

The last factor, weak law enforcement, makes it difficult to enforce various types of contracts while performing business activities. In the case of a business group, where different business units come together under common ownership, the enforcement of contracts and the related costs are much easier and cheaper.

All of the factors listed above that are important characteristics of the Russian economy and culture correspond to the factors for business group formation and existence discussed in the previous chapter. Therefore, when the business groups in Russia formed, there were sufficient reasons for economic units to do so.

3.2. Characteristics of Business Groups in Russia

Business groups in Russia formed by 1994 (Johnson, 1997), following highly controversial loan-for share deals with insider-dominated privatization (e.g. “Report of the State Auditing Committee of Russia”, 2004). In some sense business groups in Russia were formed under government discretion, as many privatization deals were approved and supported by the government.

Business group formation in Russia manifested the period of transition from the economy controlled by the state (planned economy) to the market type economy where the influence of the state is eliminated or greatly reduced. In this aspect the process that took place in Russia is similar to processes that took places in other countries with a planned type of economy, for example China. In China the formation of business groups was also

performed under governmental control and manifested the beginning of a new era of movement towards a new type of economy.

But unlike China, Russia did not move to a new type of economy by doing this slowly. It seems that the goal in Russia was a rapid and complete demolition of the old economic system. Since 1993 the business groups have begun to play an increasingly important role in the Russian economy.

The main characteristics of the Russian business groups are given in table 3.1. The table also shows the differences and similarities between the Russian business groups and business groups in some other countries.

The countries selected are those that represent the main modes of corporate governance, such as European and Anglo - Saxon modes of corporate governance. The countries also differ in the levels of their socio-economic and cultural developments. For example, Japan is a developed country but a country that has different cultural characteristics than those in Europe and Northern America. And as was outlined in the previous chapters, cultural characteristics play an important role when social ties in business groups are a concern. The countries also differ in the forms of the prevalent ownership structure in the economy. For example, China is taken as an example of a country with planned economy.

The characteristics presented in Table 3.1 are as follows:

- a). Ownership structure: private and mixed (state and private ownership);
- b). Corporate governance: Russian business groups are governed by two boards (like Germany). But unlike the German insider model of governance, members of the Board of Directors in Russia can be independent directors and company management (like the Anglo-Saxon model of governance);
- c). Financing: banks are often at the heart of business groups, same as in Germany, Japan, China, but unlike Korea, the USA and the UK. Business groups are allowed to raise funds through external capital market (stocks and bonds). Bonds are becoming increasingly popular in Russia. This is similar to Japan and Germany but unlike Korea. Government help in terms of financing is very limited in Russia (unlike China and Korea);
- d). Social ties are very important in the Russian business groups. This characteristic makes the Russian business groups look similar to business groups in developing economies and in Japan, however, with one exception related to family ties (unlike developing economies and Japan, but like China).

3.2.1. Empirical Evidence on the Role of Business Groups in Russia

The empirical evidence on the role of business groups in Russia is mixed (e.g. see Estrin, 2002). Business groups are assumed to have better access to internal and external financing

and thus better performance than otherwise unaffiliated firms. Business groups are also more transparent and are expected to develop better governance habits. Most of them have to comply not only with the internal regulations in Russia but also with the international standards when they want to raise additional financing on international financial markets (and many do so).

However, a common belief is that business groups tend to perform poorly in Russia (Stiglitz, 1999). This is partially due to the highly controversial nature of the privatization process when most business groups were formed. As well, it is due to the years of unsatisfactory performance of the economy in Russia followed by the economic and financial crisis in 1998.

However, most of the empirical research conducted so far on the business groups in Russia and the former Soviet Union republics has often found evidence in support of some positive effects of business groups.

For example, Perotti and Gelfer (2001) found that groups in Russia have higher values of Tobin's q than otherwise unaffiliated firms. They find that groups allocated capital better. A negative correlation between cash flows and investment was found in group firms in comparison to non-group.

Black (2001), using a sample of 21 big companies in Russia, has found that the corporate governance tends to predict market value. He also found that companies with better

corporate governance and transparency ratings had better valuation on the financial markets. Apparently among those companies the majority were the companies that form the largest privately-owned business groups in Russia.

Gorodnichenko and Grygorenko (2004) found that productivity is improved in large privately-owned business groups (oligarchs) in comparison to others, after controlling for the endogeneity of ownership. Even though this study was performed using a sample of 2,000 open joint stock companies in Ukraine, there are apparent similarities between Russian and Ukrainian companies and economies.

Djankov and Murrell (2001) have found that large privately-owned business groups in Russia did not bring added-values to the companies in terms of organizational and financial resources and were mainly engaged in restructuring. Their conclusion is that the role of business groups in Russia was not positive.

3.2.2. Influence of Russian Economic Settings on Characteristics of Business Groups

Most of the empirical evidence to date suggests that, business groups in Russia are more welfare-increasing than otherwise. In other words, it is more common to treat business groups in Russia as more similar to those in the developing economies and Japan (La Porta, Lopez-de-Silanes, Shleifer, 1999).

There are apparent similarities between the Russian economy and developing economies. The Russian market is in the process of development: it is still undeveloped in its capital

market, legal system and other relevant market institutions. From a social point of view, Russian culture exhibits some collectivist features, with a reliance on implicit contracting and with strong social ties among members of social groups. In this sense, Russian business groups are similar in their role and structure to business groups in developing economies and in Japan.

However, there are profound differences as well. The first and most important difference is the level of economic development (high industrial development, a highly educated labor force, etc.), which brings the Russian economy much closer to the economies of developed countries. In other words, Russia is an emerging market, but it is not a developing economy. From this perspective, it is plausible to suggest that the effects of business groups in Russia should exhibit similarities to the effects of business groups in *both* developing and developed economies.

The other important difference is in the process of formation of BGs that affects the role they play in the post-Soviet economy (unlike developing countries and mature markets). Business groups in Russia formed after the collapse of the Soviet Union. They undoubtedly inherited the structure of the conglomerates in the Soviet economy. The Soviet economy consisted predominantly of large conglomerates owned by the government. These conglomerates immediately and naturally obtained a monopoly position on the market after the collapse of the Soviet Union.

There is a general consensus that these BGs were rarely engaged in restructuring and privatization and did not bring new managerial or financial resources to the enterprise (Perotti and Gelfer, 2001, Djankov and Murrel, 2000). Therefore in many cases large Russian BGs were simply preserving structures inherited from before. It would be interesting to investigate the role of newly-formed BGs and their influence on performance in comparison to the Soviet era. There is some evidence, including some statistical indicators, however, there was no systematic research performed to investigate this issue. Perhaps this will become a road to follow for some future research in the topic of business groups in Russia.

3.3. Categories of Business Groups in Russia

The purpose of this study is to examine the influence of BGs on the Russian economy in a broad context of ownership and performance effects. For this purpose large and medium firms operating in Russia were divided into two main categories: a) *Oligarchic BGs (OBGs)* and b) *Non-oligarchic firms (non-OBGs)*.

This study defines *oligarchic BGs* as large business groups owned by the private sector with highly concentrated ownership. Very often this concentration is focused in the hands of very few individuals (oligarchs) but not necessarily families, as family ownership is not yet widespread in Russia (see for example Hoffman, 2003; Almedia and Wolfenzon, 2003). And very often oligarchic BGs or firms affiliated with them raise funds by means of external financing trading their shares on the public stock exchanges. These types of business groups can have either horizontal or vertical structure and can be owned either by means of direct control of voting shares or by means of pyramids. The overall definition of business groups is the same as that already adopted as a combination of the definitions

given in economics and sociology (Leff, 1976 and Granovetter, 1994). This definition of OBGs is easy to operationalize by means of the available data and subsequently test for its validity as well. The tests for the reliability and validity of the definition of oligarchic BGs are performed in the later sections of this study.

This definition of oligarchic BGs is generally in agreement with the definitions of business groups in Russia given previously in literature. For example, it corresponds to the definition of oligarchs as large privately owned business groups (conglomerates) in the study by Gorodnichenko and Grygorenko (2004). The main difference is the absence of the dimension of the political power and control that seems to play a role in the definition of oligarchs given by Gorodnichenko and Grygorenko (2004). Political power and political connections in the definition of oligarchic BGs are unaccounted for, since it is almost impossible to operationalize this definition. It is not clear how the political power or political connection of the BG can be measured. It appears that there were only a few studies so far where political connections and political influence of BGs were confirmed (e.g. Fisman, 1998, on Indonesia).

Another difference from the definition given in the study of Gorodnichenko and Grygorenko (2004) is the use of the term “oligarch”. The way this term is used in their study is different from the way it is used normally in literature and in every day life. “Oligarchs” in their definition are business units, “economically and politically powerful conglomerates”, while the normal meaning of the word “oligarch” is related to the person and not to some object or an organization.

It is not clear where the term “oligarch” came from in relation to the owners of BGs in modern Russia and probably it is not possible to trace its origin, even though the word became popular. However, it is easy to trace the general meaning of the word “oligarch” and the terms that are related to it.

For example, according to the Encarta World English Dictionary (2004), the modern meaning of the word “oligarch” is “a member of oligarchy: a ruler or leader in an oligarchy”. The word came into use in the English language in the early 17th century. It is from the Greek oligarkhēs, from oligos “few” + -arch “rule”. The noun oligarchy in turns has the following meanings:

- “1. small governing group: a small group of people who together govern a nation or control an organization, often for their own purposes;
2. entity ruled by oligarchy: a nation governed or an organization controlled by an oligarchy;
3. government by small group: government or control by a small group of people”.

Other dictionaries (e.g. “The Concise Oxford Dictionary”; “Standard College Dictionary”, etc.) give the same or very close meaning to the word “oligarch” and “oligarchy”. Therefore it is not correct to label a business unit an “oligarch” from the stand-point of common language. The better way to label a business unit would be to use the word “oligarchy”, as it corresponds to the definition of “oligarchy” given by most dictionaries. In

that case the “business oligarchy” will represent an organization that is being controlled by a small group of people, often for their own purposes. However, in most cases the term “oligarchy” is used when the nature of the state governance has to be described, for example, “oligarchy”, “autarchy”, etc.

Neither of the terms (“oligarchs” or “oligarchy”) appears to be appropriate to use in relationship to the BGs, unless we want something to be different from what is meant and said by the “plain man” in the “real world”, as Coase (1937) puts it with respect to the definition of the firm. If we want to label the same thing that is meant by “the plain man” in the “real world” and by most dictionaries, it appears better and more appropriate, though longer, to use the terms “oligarchic”. The word should be used in relationship to business groups, owned privately by few individuals (oligarchs). Thus, we will use the term “oligarchic BGs” or “OBGs”.

The definition of oligarchic BG s corresponds to the definition of the BGs given in the study on the Russian market by Perotti and Gelfer (2001). Only in their case close attention is paid to the business groups with banks at their core (financial - industrial business groups). Our definition has a broader meaning, as it is not solely bounded to the groups with the main controlling banks at their core.

The second category (non-oligarchic firms) can include business units that represent business groups as well as unaffiliated firms. However, in the case of the business groups,

the ownership structure of these BG should be predominantly state (in excess of 20% of shares trash hold).

Figure 3.1 summarizes how business units in Russia were categorized in this study. It shows two main categories the firms are divided into: oligarchic BGs and non-oligarchic firms.

Recent developments in Russia suggest a natural foundation for such a grouping (OBGs and non-oligarchic firms). They also suggest the timely importance of close investigation of the performance of state- and privately-controlled groups (e.g. the possibility of the de-privatization or transfer under a predominant government control of large banks and oil companies). Figure 3.2 illustrates the evolution of business groups in Russia over time.

It is interesting to note that similar processes of de-privatization are seen to take place in some other countries of the former Soviet Union countries, such as, for example, Ukraine. After almost a decade of controversial deals on privatization, many firms might change their owners and the ownership structure. The influence of this process on general economic situations in the countries of the former Soviet Union is yet to be determined. It is clear, however, that long periods of uncertainty, when the nature of privatization deals remains unclear, will not have a very positive influence on the economic development. Some might argue that stability is more beneficial even though it might come with a certain amount of controversy.

3.4. Conclusion

Business groups are seen to play a very important role in Russia as well as all over the world including developing economies and developed countries. Russia has special characteristics that make the formation of business groups a natural process. As was outlined in this chapter, factors that are important for the existence of business groups are reliance on social ties for contracting, undeveloped financial markets, oligopolistic structure of industry, segmented information flows and others. At the same time, it allows for testing of effects that might not be testable in mature markets (it has been only a little more than a decade since the business groups appeared in Russia).

Russia is not a developing economy but it is not a mature market either. Therefore certain effects that are specific to both mature and developing markets can be tested in the setting of Russian business groups.

For the purposes of this study the firms that operate in Russia were divided into two main subgroups: OBGs and non-oligarchic firms. The definition of oligarchic BGs was also given. This definition corresponds to the definitions of BGs in Russia used in previous studies, as well as providing additional insight into the nature of BGs in Russia. The definition of oligarchic BGs is also based on the more general definition of BGs from economic theory and from sociology discussed in Chapter 2.

Categorization of firms operating in Russia into two main subgroups has the advantage of being easily operationalized. It allows for the possibility of testing of the oligarchic BGs

measure based on available data. The formal tests of validity and reliability of this measure will be given in later chapters.

Categorization of firms into two subgroups such as oligarchic BGs and non-oligarchic firms is suggested by the present changes that are taking place in some countries of the former Soviet Union. After decades of controversial privatization the process of returning some of the assets belonging to some BGs has taken place (e.g. Russia and Ukraine). Therefore it is important to test for various effects of private ownership: oligarchic BGs versus their non-private counterparts, including state-owned BGs, and non-affiliated firms with either form of ownership.

Therefore the categorization of firms in Russia presented in this chapter serves the main purpose of this study: to test the effects of group and subgroup affiliation on performance (profitability, productivity and investment) using a broad range of performance measures (return on assets, change in fixed assets, value added, taxes paid, etc.) within different times and context effects (including industry effects and external shocks, such as the financial crisis in Russia).

Table 3. 1 Comparison of Characteristics of Business Groups in Russia and some Other Countries

Factor/ Country	Russia	German y	UK	USA	Japan	Kore a	China
Ownership	Mixed	Private	Private	Private	Private	Private	Mixed
Board Structures	Two boards	Two boards	One board	One board	One board	One board	One board
Director Independence	Limited	No	Often	Often	No	No	Limited
Bank Financing	Yes	Yes	No	No	Yes	No	Yes
Debt Financing	Yes	Yes	Yes	Yes	Yes	No	Limited
Government Financing	Yes	?	No	No	No	No	Yes
Social Ties	High	Low	Low	Low	High	High	High
Importance of Families	Low	High	Low	Low	Low	Low	Medium

Figure 3. 1 Categories of Business Groups in Russia

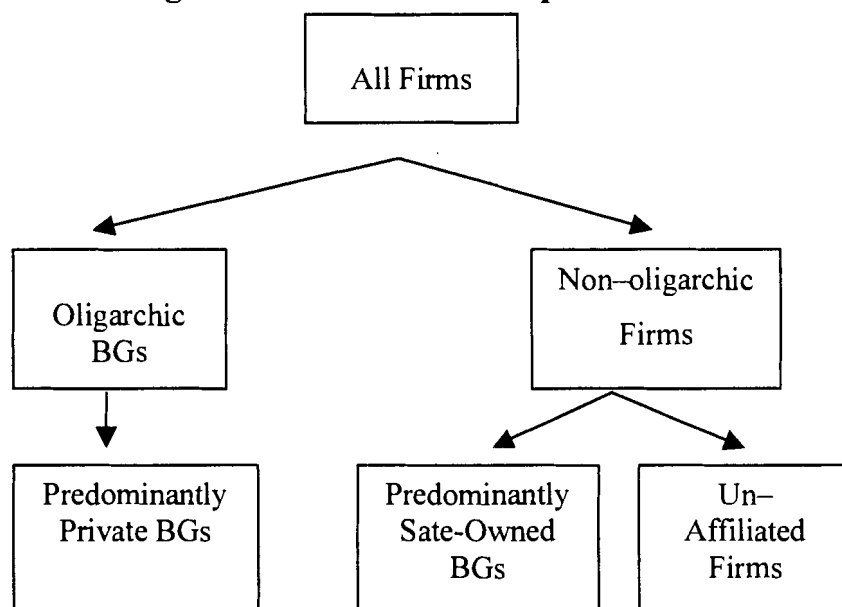
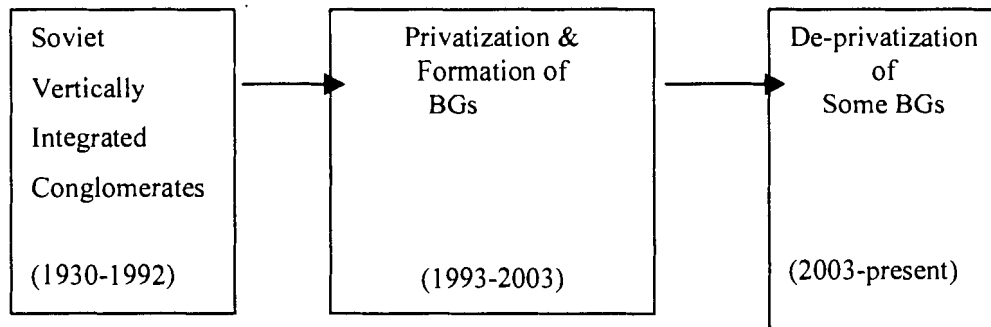


Figure 3. 2 Stages of Business Groups Formation in Russia



Chapter Four

Research Hypotheses, Research Method and Description of Data

4.1. Research Hypotheses and Research Method

Previous discussion on the role of business groups in mature and developing markets, and on the special characteristics of business groups in Russia gives rise to the family of hypotheses aimed to test for the effects of oligarchic BGs (OBGs) and non-oligarchic firms in the Russian economy. Some of the hypotheses outlined below will provide a generalizability and validity check of findings from previous studies. Others raise a host of new and previously unexplored questions.

The purpose of this study is to test the performance effects of the OBGs and non - oligarchic firms in terms of three main areas of their activities: profitability, productivity, and investment. In regards to productivity we will look at the outcome to the society in terms of tax revenues generated by the oligarchic BGs and non-oligarchic firms.

4.1.1. Profitability

With respect to the first performance indicator - profitability - we would expect the following statements to hold. According to previous research on behavior of oligarchs in Ukraine (Gorodnichenko and Grygorenko, 2004), oligarchs appear to be more productive. At the same time, the propositions made in that study relate productivity to profitability such as return on capital (usually measured by ROA, ROI, and ROE). Specifically, the authors propose that the oligarchs have a weakly higher return on capital in productive firms. This proposition, however, was not tested empirically. According to the general

findings on the relationship between profitability and affiliation with business groups, this relationship is positive for the majority of emerging markets and developing economies (e.g. Khanna and Rivkin, 1999, 2001; Khanna and Palepu, 2000; Chang and Choi, 1988). Studies estimating performance effects of business groups in developing economies (Khanna and Rivkin, 1999, 2001) examines the effect of group affiliation on a firm's profitability in the example of groups from 14 developing economies. They find that group affiliation affects a firm's profitability in 12 markets and in several of the examined markets this effect is positive.

A similar conclusion was made based on the analysis of group affiliation on a firm's profitability of diversified Indian business groups (Khanna and Palepu, 2000) and four largest Korean *chaebol* (Chang and Choi, 1988). The affiliation with diversified business groups in India and membership in one of the four Korean *chaebol* on average benefited the member firms more in terms of profitability than their unaffiliated counterparts.

Tests on the example of mature markets that relate profitability and concentration of ownership generally find a positive relationship. However, the influence of ownership concentration on profitability is not straightforward in mature markets (Gedajlovic and Shapiro, 1998). It highly depends on such context variables as existence of external and internal controls.

Tests on the example of mature markets that relate profitability and diversification generally had negative or neutral result (e.g. Rhoades, 1974; Utton, 1977; Montgomery,

1985; Montgomery and Wernerfelt, 1988; Palepu, 1985). Negative effect of diversification on performance was found also in cross-country studies in some countries (Gedajlovic and Shapiro, 1998). In most of these studies performance was measured using accounting measures of performance such as ROI, ROA and ROE. Financial performance and firm value was measured using Tobin's q.

However, the effect of diversification was found to be positive on average for those firms that tend to diversify their activities around their core capability than for those that tend to diversify in the unrelated areas of business (Rumelt, 1982; Christensen and Montgomery, 1981; Varadarajan and Ramanujam, 1987).

As both of these characteristics (ownership concentration and diversification) are important characteristics of the majority of business groups all over the world and in Russia, these findings can give some insight into the behavior of oligarchic BGs in Russia in comparison to the non-affiliated firms and state-owned BGs.

Since Russia exhibits characteristics that are similar to both mature and developing economies, we would expect that the result found in the immature markets (i.e., profitability is higher for the group affiliated firms) to hold in the Russian setting with respect to OBGs as well. At the same time, findings from the mature markets that show negative relationship between diversification and profitability, mostly in the cases of firms that diversify in the unrelated areas. Findings in mature markets have also shown generally

positive relationship between ownership concentration and profitability that are mediated, however, by the existence of external and internal controls.

In this context influence of affiliation with oligarchic BGs in Russia on a firm's profitability should be more profitable than not, as the Russian market is still in the process of development. Information asymmetry, agency problems, and general market inefficiency are common. At the same time, the level of economic development of modern Russia inherited from the Soviet Union era, as well as external shocks caused by transition from planned to market economy, might play a significant role as well. For example, a general profit maximization goal might not be the best strategic decision for economic agents under these circumstances. In the long run the goal of profit maximization might be achieved if the distractive influences of external shocks of a transitional period are avoided or minimized, so that the general structure of an economic unit is preserved in order to perform its goals in future.

The results on the affiliation with BGs and profitability in Japan show a somewhat different picture. Japanese business groups (BGs) appear to have lower profit rates than non-affiliated companies but they are more stable over time (Caves and Uekusa, 1976; Lincoln et al., 1996). In general while affiliation with groups in Japan does not bring member firms on to the highest level in terms of profitability, group affiliation is beneficial for them as well. The stabilization effect of group affiliation allows the weaker but potentially profitable firms to survive through the economic slowdowns and hardships due to redistribution effects of profits from other members (Lincoln and Gerlach, 2004).

The stabilization and redistribution effects of a business group's affiliation on a firm's profitability has been extensively studied before on examples of Japanese business groups (e.g. Gedajlovic and Shapiro, 2002; Lincoln and Gerlach, 2004). Foundation studies by Caves and Uekusa (1976) and Nakatani (1984) showed that the Japanese keiretsu are generally less oriented towards profit maximization goal than the independent firms. This fact was considered a general disadvantage of business groups in Japan.

More recently Gedajlovic and Shapiro (2002) examined the relationship between ownership structure and financial performance of more than 300 Japanese corporations over a five-year period and found generally positive relationship between ownership concentration and firm profitability. However, they also found a more pronounced profit redistribution effect within the context of business groups characterized by the transferring of financial resources from more to less profitable firms.

In this context it is of an interest to examine the influence of affiliation with OBGs on a firm's profitability keeping in mind possible intervention and profit redistribution goals of oligarchs and not a profit maximization goal *per se*. Available academic studies on group affiliation in Russia have not examined the issue from this angle. Since in the long run the goal of profit maximization might be achieved if the distractive influences of external shocks of a transitional period are avoided or minimized (so that the general structure of an economic unit is preserved in order to perform its goals in future), then a profit maximization goal might not be the best strategic decision in the short run. The

redistribution effect of oligarchic BGs on profits (if confirmed) might also suggest not just the stabilizing role of OBGs. It might suggest the opportunistic transfer of resources or looting (Perotti and Gelfer, 2001).

Based on the above discussion the following statements on the behavior of oligarchic BGs in Russia are made.

Hypothesis 1.a. Affiliation with OBGs has a positive but weak influence on the profitability of affiliated firms.

Hypothesis 1.b. Affiliation with OBGs should benefit more the weaker firms in the group due to the redistribution effect of oligarchic BGs on profits.

4.1.2. Investment

Some evidence with respect to the behavior of oligarchic business groups in Russia and the former Soviet Union is found in the study by Perotti and Gelfer (2001), showing that financial-industrial groups in Russia tend to invest more in fixed assets, and with no or very little profits showed on the balance sheets (Filatotchev, 2004 study on the example of Ukraine). In other words, it is plausible to suggest that oligarchic BGs are fixed assets and not profit maximizers.

A similar proposition on the behavior of oligarchic BGs with respect to investments is made in a study on the oligarchs in Ukraine (Gorodnichenko and Grygorenko, 2004).

Specifically, it makes a prediction that oligarchs make weakly larger investments than other owners. This proposition was not tested empirically.

General findings on the behavior of business groups support this idea about the investment behavior of business groups. For example, in earlier studies (e.g. Leff, 1976) it was shown that business groups in developing countries tend to invest more in fixed assets, including urban residential real estate, in an attempt to diversify and protect their portfolio holdings. This result was supported by later research on the behavior of large BGs in developing markets (Khanna and Palepu, 2000; Khanna and Rivkin, 1999; Khanna and Love, 2003).

Studies on the behavior of diversified conglomerates in mature markets also have shown that, according to the cash flow hypothesis (Jensen, 1986), management in these firms tends to make higher investments in projects (including mergers and acquisitions) than other firms.

Based on this discussion the following statement about the investment behavior of oligarchic BGs is plausible:

Hypothesis 2.a. Holding everything else constant OBGs tend to invest more in fixed assets than non-group firms and/or non-oligarchic groups.

With respect to the availability of funds for investment projects and types of sources of financing, it appears that oligarchic BGs have to have better access to external financing

(such as debt financing and to raising funds on the public stock exchanges) as well as to be less financially constrained than non-oligarchic firms.

According to the study by Perotti and Gelfer (2001), financial-industrial groups (FIGs) in Russia are much less financially constrained than other firms. They found a negative sign on the internal cash flows in the investments equation of FIG that suggested absence of financial constraints. Other firms had a positive sign on the external cash flows variable in their investment equations. This result is obvious, as FIGs that have a bank in the heart of the BG obviously have better access to financing to meet expenses related to investment projects. In the same study on the behavior of BG in Russia, it was found that FIGs carry significantly less cash than other firms.

Numerous studies on the behavior of BGs around the world have suggested that one of the reasons for BGs' formation is to substitute for the missing market institutions or to avoid complications with respect to market imperfections. These reasons for BGs' existence and formation were discussed in earlier chapters of this study. In particular, the economic theory point of view is that the BGs form in the first place to substitute for the missing market institutions. This point of view, even though criticized by sociologists due to the impossibility of generalizations, is valid in our case.

Russia has been going through the process of transition to the market type of economy and obviously market institutions were not developed there as in many developing countries. Therefore, BGs in Russia had to serve the role of substitutes to the absent institutions on the

market. For example, the Russian financial stock exchanges are not very big in comparison to the size of economy (Goldberg and Desai, 1998), and debt financing through the unaffiliated banks was also very small (high inflation rates is one of the reasons but not the only one).

The internal financial market created within oligarchic BGs, therefore, was a proper response. It allowed the avoidance of the problem of getting financing for investment projects made by oligarchic BGs. This statement has to hold with respect to oligarchic BGs that have a bank within their core, as well for those oligarchic BGs that do not have a bank within their organizational structure. If the oligarchic BG does not have a bank within its structure, it still can have much better access to external financing than non-oligarchic firms (less so with respect to non-oligarchic BGs). The size and the scope of the OBG make it much easier to convince investors and banks to lend money or to invest.

Based on this discussion the following statements are plausible:

Hypothesis 2.b. Holding everything else constant, OBGs are less financially constrained than non-oligarchic firms

Hypothesis 2.c Holding everything else constant, OBGs have better access to external financing for their investment projects than non-group firms and non-oligarchic groups.

4.1.3. Productivity

With respect to the last factor that we will use to examine the behavior of oligarchic BGs and non-oligarchic firms in Russia - productivity - our expectations are based on the following. According to the already cited work on the Ukrainian oligarchs (Gorodnichenko and Grygorenko, 2004), the propositions with respect to the positive influence of oligarchs on productivity was tested empirically and confirmed. Oligarchs appeared to be more productive than otherwise non-affiliated firms. These tests were made on a sample of 2000 Ukrainian firms. As was mentioned earlier, the difference between Ukrainian and Russian BGs should be only marginal. In any case, it appears that it is plausible to generalize this result. The tests that will be done further in this study serve the purpose of proving the generalizability of the results of the study on Ukrainian business groups.

Hypothesis 3.a. Holding everything else constant, OBGs are more productive than non-oligarchic firms.

If the oligarchic BGs are more productive then it is reasonable to suggest that they are also capable of generating more tax revenues than otherwise un-affiliated firms. Gorodnichenko and Grygorenko (2004) in the study on the Ukrainian business groups make a prediction that, for a sufficiently large increase in productivity and investing oligarch pays more in taxes than non-investing owner if the marginal penalty for looting is elastic. This proposition was not tested empirically either. Neither was the propositions that looting is decreasing in penalty.

In a different study on the Russian BGs by Desai, Dyck and Zingales (2003), it was found that the increase in penalty does have an impact on the behavior of some BGs in Russia and companies in many countries. In particular, it was shown that lowering the tax rate that is combined with increased tax law enforcements in the countries with weak corporate governance has positive impact on the tax revenues generated by the BGs.

Desai, Dyck and Zingales (2003) also put forward the idea of testing empirically what they call the “corporate Laffer curve”. The idea behind the corporate Laffer curve is the same as that behind the ordinary Laffer curve. Tax revenues generated by corporations are increasing in the tax rate only to the point of optimum and decreasing otherwise (the first derivative is positive and the second is negative; the curve is bell-shaped). Thus, tax rates are a very important element of the Laffer curve. They test their predictions with respect to the corporate Laffer curve on a cross-country sample taking into account modes of corporate governance in every country as well as levels of tax enforcements. Cross-country tests of the corporate Laffer curve gave support to the proposition that, in the countries with weaker corporate governance systems and law enforcements as well as high tax rates, the state budget is getting less in terms of tax revenues generated by corporations than otherwise.

Based on the above discussion with respect to the productivity of OBGs and the impact of taxation the following prediction can be tested:

Hypothesis 3.b. OBGs tend to pay more in taxes than non-oligarchic firms when the tax rates are lower and the tax enforcements are stronger.

The idea behind the corporate Laffer curve in relationship to oligarchic BGs is given in Table 4.1. The last hypothesis is also aimed to test the corporate Laffer curve, as in Desai, Duck and Zingales (2003) but on the firm's level and not on the cross-country level.

4.2. Description of Data

4.2.1. Amadeus Database and Other Sources of Data

The predominant source of data for this study is the Amadeus database. The Amadeus database is provided by BUREAU van DIJK. The version of Amadeus data used in this study covers the period from 1998 to 2002.

Amadeus is a very large database containing information on ownership structure and financial performance indicators of major companies around the world (with more than 200 employees). The information included in this database is on over 5 million private and publicly owned firms across the countries. Amadeus includes around 10 years of performance information per company although the coverage may vary with respect to countries. This database is especially useful because it covers information on the major large and medium enterprises in Russia that are the focus of this study. The database is also useful in terms of providing relevant information on tracing affiliation of companies with major Russian business groups.

The Amadeus database also contains information on ownership structure as well as other firm-level information. This information was used to calculate concentration of ownership variable. It was also used to assess the following: ownership type (state, private or mixed); number of recorded subsidiaries; number of major registered shareholders; and whether the company is trading its shares on the public stock exchange.

This information is later used to assess validity of the main variable of interest in this study: a firm's affiliation with OBG (oligarchic business groups). The dummy variable for OBG itself is created based on the information obtained from other (than the Amadeus data base) sources of information described further in this section. The Amadeus dataset was used to create variables that later were used to test for validity of OBG variable (ownership concentration, number of recorded subsidiaries and shareholders, nature of ownership, etc.).

The financial performance data within the Amadeus dataset is obtained based on the information provided by the leading auditing consulting companies and in most cases is in line with generally accepted accounting principles in western economies. The database provides accounting data in standardized format for about 20 balance sheet and income statement items as well as for about 20 financial ratios, although the coverage may vary with respect to the company.

This information for the purposes of our analysis was used to test the hypotheses outlined in the previous section. For example, this financial information was used to analyze

performance indicators such as ROA (return on assets) with respect to each firm. It was also used to calculate the level of a firm's investment in the fixed assets (I) and indicators of a firm's productivity in terms of output, firm-level employment, capital and taxation (in terms of taxes paid to the state and local budgets). All financial performance data was converted into U.S. dollars based on the year-specific exchange rates provided in this dataset.

Amadeus also includes information that allowed the creation of control variables for a company's location and industry. For example, national industry codes and 3-digit NACE codes in the European standard of industry classification were used to create dummy variables for industry. Company' postal codes provided by Amadeus were used to create dummy variable for different regions of the country.

Amadeus data base was the primary but not the only source of information. Other sources of data include information obtained from the online edition of "Ross Business Consulting" ("RBC daily") of Russia; publications in the Russian and CIS countries business journals such as journal "Finance", "Kommersant", "Expert", and "Vedomosti"; publications by the Russian Institute of Directors, Troijka Dialog, Goskomstat - information published and provided by the Ministry of Statistics of the Russian Federation (e.g. "Ежегодный Статистический Сборник"); companies official publications and websites, other open sources of publicly available information on the Russian economy and business groups. These sources of data complemented information provided by

Amadeus and were especially useful in tracing company' affiliation with OBGs and creating related variable for OBGs.

4.2.2. Sample Selection

The 2002 edition of Amadeus was used to compile a sample of companies based on three years: 1998, 2000 and 2001. That is, the year 1999 and the year 2002 were excluded from the sample. The main reason for exclusion of two years (1999 and 2002) from our sample is lack of information on the companies we are mainly interested in (large business groups) for those years. The year 1999 was the year that followed the year of financial crisis in Russia (1998) and perhaps due to this reason information on some major companies is not covered. The information available to us on the year 2002 also lacked some important data on the large business groups in Russia and was therefore excluded from our sample. The Amadeus puts a note "not available/missing" next to the company that stops reporting for four years following the last included filing and during this period of time firms are not removed from the database. Therefore, due to the gaps in data available for the companies of interest for this study, the attention was restricted to the years when most of the companies provided information: 1998, 2000 and 2001.

The sample was gleaned from of about 70,000 companies for a period of 5 years: 1998 - 2002. The companies that lacked basic information (such as ownership and financial performance indicators) were deleted from this sample as well as those years that lack information on companies we are mainly interested in (large business groups). Then firms that reported only consolidated statements were deleted from the data and the unconsolidated statements were used to avoid double-counting of branches and

subsidiaries. Some industries such as financial service industries were dropped from the sample since their financial ratios are not comparable with non-financial institutions.

Finally the panel dataset that consisted of a balanced sample of 977 companies for the period of three years was obtained. This sample covers major companies in the major industries and regions of the country including those that are publicly traded on the financial stock exchanges. This dataset allowed for the achievement of representativeness and randomization of companies operated in Russia for a period of three years. It includes information on the large business groups as well as non-affiliated firms.

Although this sample is certainly not a perfect representation of all companies operating on the Russian market, its coverage is good. For example, in comparison to the sample sets used in previous studies (e.g. Perotti and Gelfer, 2001; Black, 2001) on the business groups in Russia, we do not limit our attention to the companies that only trade their shares on the public stock exchanges. We also use a larger and more representative sample of companies in our study (for example, Perotti and Gelfer's 2001 study sample size is around 200 companies and Black's 2001 study sample is around 20 companies).

Table 4. 1 Corporate Laffer Curve and OBGs
Enforcement

Tax Rate	High		Low
	High	Low Tax Revenue	Low Tax Revenue
	Low	High Tax Revenue	Low Tax Revenue

Chapter Five.

Assessing Validity of a Measure for Oligarchic BGs

5.1. Introduction

This study set out to construct a measure of characteristics of firms operating in Russia that would allow to identify and to classify these firms as either oligarchic or non-oligarchic BGs. Here and elsewhere in this study we call it a “measure for OBGs”. To create a measure for oligarchic BGs and to trace ownership of companies by oligarchs within our sample of 977 Russian companies, the following steps and the following external (other than Amadeus data set) sources of information were used. First, those firms in the sample used in this study that appear to be listed in the industrial-financial groups’ registry book were coded.

Secondly, more companies were added using information available from such journals as "Vedomosti", "Expert", "Finance", and "Kommersant-Vlast", and the online edition of "RBC daily". Information from “Kommersant-Vlast” was used to assess a broader picture of corporate group ownership and control with respect to different industries in Russia for the period of 1998 to 2001. Information from journal “Finance” was helpful in assessing a structure of business groups’ control and ownership with respect to the number of controlling individuals. At this stage, listings available from the institutions that specialize in corporate governance issues in Russia such as the Russian Institute of Directors and Troijka Dialog were also used.

General public media sources were used as well. They include among others such mainstream outlets as the newspapers "Trud", "Izvestia", "Argumenty i Fakty", etc. The degree of credibility of materials published by these outlets is usually good. Other information widely available to the public was used as well. To cross-validate information on ownership of companies, information available from companies' official publications and websites was used. Some companies are very good in terms of displaying most of their group and ownership structure to the public.

At the next stage those companies that are owned by the state in excess of 20% of shares (mainly state owned) were excluded from our sample of group companies. Those companies that belong to oligarchs by means of pyramidal or family ownership and not direct share ownership were added. Thus, ownership concentration and information on the officially registered owners were not the main decision variable in this case. Company size in terms of its assets or other criteria that are usually used to assess the size was not a main decision variable either. Though most oligarchic BGs are large business groups, units within the group do not have to be. In fact, there are several cases in our sample when a medium size company played the most important role in the whole business group framework. Small companies could not be included as members of group structure, as the available data limits companies to medium and large size. Industry was regarded as a useful criterion but it was not the main criterion. While most of OBGs-affiliated companies are from natural resources industries such as oil and gas, it would be an extreme simplification to think that all of them belong to this sector.

Based on the approach outlined above around 28% out of our sample of 977 Russian companies were labeled as “oligarchic BGs”. There are 274 OBGs-affiliated companies within the sample. The next step in creating a measure for OBGs is to assess its reliability and validity by making sure that measurement error is negligible and that the variable is measuring what it is supposed to measure. The next section describes the process used to test for validity and reliability of a measure for OBGs.

5.2. Assessing Validity: General Approach

To test for validity of a created measure of oligarchic BGs, the following approach was used. First, the variables that can be used to test validity of this measure were defined. Then exploratory and confirmatory factor analysis on these variables and OBG variable was used.

In the case of defining a new measure it is useful to take an approach that follows a “two-way street”. First, it is useful to access a new measure in the framework of previous findings in the academic literature on similar issues. Second, it is useful to “take hints” by observing available evidence on the phenomenon under investigation.

Based on the available theoretical and practical findings in the academic literature on business groups around the world discussed earlier in Chapter 3 and also based on the evidence obtained in the process of tracing ownership of companies in the sample, outlined in the previous section, the following approach to testing for validity of the measure for OBGs appears to be plausible:

A business unit is defined as an OBG (a business group owned by oligarchs or oligarchic BG, under the definition in Chapter 3), if the following five conditions are met:

1. Member of a large group of companies;
2. Privately owned;
3. Highly concentrated ownership;
4. Concentration of ownership in the hands of few individuals;
5. Publicly traded.

Additional conditions include the following:

6. Pyramidal ownership;
7. Family ownership.

Additional conditions may or may not be met. As was pointed out in Chapter 3 of this study, there is limited evidence on pyramidal ownership and/or family ownership in Russia. And there is lack of available data that would make it possible to account for these conditions while performing validity tests of a measure for OBGs. In other words information about pyramidal and family ownership may be (and will be if the observed measure for OBGs is very closely related to the true unobserved measure) contained in the created measure for OBGs but there is no possibility to test for it based on the available data. There is not enough information in the data set that would allow one to create proxies for pyramidal and family ownership.

The first characteristic (company is a large group member), as was mentioned earlier, is obtained from the data (number of registered subsidiaries) and from the open sources of

information on business companies in Russia. The term "large" in this case means the total number of group members as well the group total size in terms of assets and sales. To account for the groups size information from available data was used, and such editions as the online editions of "RBC daily"; the newspaper "Finance", "Kommersant-Vlast"; companies' annual reports and official websites, as well were being used to trace group membership. The dummy takes a value of 1 if a company is a member of group of companies and 0 otherwise. This variable is closely related to the OBG variable but it also differs from it on several dimensions. One of them is, for example, the form of ownership. Another is related to strategic industry alliances. Strategic alliances may exist in a form of a large group of companies on a short-term basis but they are excluded from the definition of BGs adopted here (see Granovetter, 1994).

The second characteristic (company is privately owned) is defined based on a 20% benchmark. Companies with ownership of their shares in the hands of the state in excess of 20% are not defined as strictly privately owned. Information is obtained from the available data set.

Information on concentration of ownership (third condition) is obtained from the data. It is a percentage of shares belonging to direct shareholders. The number of individuals controlling the company (fourth condition) is obtained based on the available data on the number of registered shareholders. For the purpose of this study we chose a benchmark of five individuals.

Information on whether the company is trading its shares to the public (last condition) is obtained from the data. The last condition is aimed to account for the possibility that oligarchs in Russia have better access to the outside sources to raise funds than others (e.g., Perotti and Gelfer, 2001).

The number of important conditions (1 to 5) outlined above to test for validity of our measure of OBG does not account for a number of characteristics of business groups in other countries. First of all, they do not take into account family ownership (condition 6). Family ownership of business groups is very popular all over the world (e.g. Morck, Stangeland and Yeung, 2000 for Canada; La Porta, Lopez-de-Silanes and Shleifer, 1999; Almedia and Wolfenzon, 2003 in other countries). However, in Russia family ownership is still not very popular (Almedia and Wolfenzon, 2003). One possible explanation for this is the culture and timing of business groups' formation.

Secondly, the number of conditions (1 – 5) outlined above, that will be used to test for validity of OBGs measure, does not explicitly take into account the possibility of pyramidal ownership. For example La Porta, Lopez-de-Silanes and Shleifer (1999) suggest that pyramidal ownership is more common around the world than the direct use of shares with superior voting rights. Although, up-to-date research on business groups in Russia has not shown that pyramidal ownership is the predominant form of business groups' ownership, it is plausible to suggest that pyramids in Russia are not less common than in the rest of the world. First of all, systematic research on performance of business groups in Russia is limited to date and secondly there is no evidence to suggest that there is some important

condition in place in Russia that will make pyramids in Russia useless. Russia is different from the rest of the world in terms of cultural values that might make family ownership less popular but it is not different otherwise.

There is no contradiction between high concentration of ownership in the hands of few individuals (condition 4) and pyramidal ownership (condition 7). As research on pyramids around the world shows (Almedia and Wolfenzon, 2004), owners of business groups through pyramids prefer to keep shares far in excess of what is required from the point of view of efficiency. (Transaction costs theory suggests that pyramids exist because they allow to the minimizing of costs of ownership in comparison to direct ownership through shares with superior voting rights.)

Therefore, when the measure for OBGs was created (affiliation with oligarchic BGs was traced using available sources of information), ownership of companies by oligarchs through pyramids (and family ownership) was taken into account. However, it is not possible to test for the assumption of pyramidal and family ownership directly due to limitations of available data.

5.3. Variables, Descriptive Statistics

The list of variables selected to test for validity of Oligarchic BGs measure in this study have the following abbreviations:

“State” variable is used to define companies with more than 20% ownership of their shares by the state. This is a dummy variable that equals 1 if a company is mainly state owned and 0 otherwise.

“GM” dummy for group membership. Takes value of 1, if a company belongs to a large group of companies and 0 otherwise.

“Concn” variable is used to measure percentage of shares directly owned by the main shareholder.

“Pb” dummy variable for publicly traded companies. It takes values of 1, if company is trading its shares on the stock exchange, and 0 otherwise.

“Indiv” is a dummy variable for the number of registered owners (five is a benchmark). We selected five individuals’ ownership as a benchmark based on preliminary screening of the data.

Around 40% of companies from the available data have only one registered owner. This would make it difficult to test for a statistically significant relationship with the measure for oligarchic BGs. Correlations of the measure of oligarchic BGs with two, three, four and five registered owners were positive but only in the case of five it was significant. Correlations of the OBGs variable with six to ten registered owners was negative but only in the case of ten owners it was found to be statistically significant. Existence of missing data on the number of registered owners in our sample might contribute to the problem. Thus a middle range number of 5 registered owners that had significant correlations with the OBG measure and no missing data were selected.

As can be seen from Table 5.1, most correlation coefficients of the variables of interest are significant at the 5% level. Only in the case of Indiv variable (dummy for 5 registered owners) correlations were found insignificant with the dummy for public trading, concentration of ownership and dummy for group membership.

Correlations of the dummy variable for group membership with our measure for OBGs is around 86% and highly statistically significant. Correlation of OBGs measure with dummy for state ownership is negative 0.36 and also highly statistically significant. Other correlations of measure of OBGs and selected variables are lesser in magnitude but have the right signs and are statistically significant.

These results are what one would expect, if the variable, measuring oligarchic business groups, is measuring what it is supposed to measure. Thus, the preliminary analysis of reliability and validity of measure for OBGs is certainly encouraging. We then turn to the more rigorous ways of testing for validity of this measure: exploratory and confirmatory factor analyses.

5.4. Testing for Validity of a Measure for OBG

5.4.1. Exploratory Factor Analysis

According to the results of the factor analysis of five variables (OBG, State, GM, Concn, Pb and Indiv), two to three factors should be retained. As shown in Figure 5.1, a significant drop in magnitude of eigenvalues (from 0.24 to 0.03) occurs after the second factor. These two factors explain together 54.4% of variation in the underlying variables. In particular,

the first factor explains 32% and the second factor around 21% of the variation. The third factor gives additional 15 % to the explanatory power of the factor analysis.

Unrotated factor loadings gave the following results: variable State has positive loading on the first factor and negative on the second; variable Conc n has positive loading on the second factor and negative on the first; variable GM has positive loading on the first factor and close to zero loading on the second factor; variable Indiv has negative loading on the second factor and close to zero on the first; and variable PB has positive loadings on both factors. Loadings of variables on the third factor are much smaller in magnitude. Rotated factor loadings analysis (varimax rotation) is generally supportive of these results. Two factors were retained for further analysis. Scree plot of eigenvalues in Figure 5.1 shows that two factors to be retained is a reasonable way to proceed. A significant drop in eigenvalues magnitude occurred after the second factor's eigenvalue. In terms of explanatory power, two retained factors are capable of explaining around 60% of variation in the underlying variables. Thus retained factors are sufficient for further analysis in terms of their explanatory power. From the statistical point of view, when it is related to structural equation modeling the problem always remains with possibility to run out of the degrees of freedom. Two factors on five observed variables should not present such a big problem.

Further analysis of two retained factors is necessary to determine their relationship to the variable in question: OBGs measure. In particular analysis of correlation coefficients between measure of OBGs and two factors is necessary. Correlation coefficient of measure of OBG with the first factor is 0.61 and significant at 5% level. Correlation coefficient of

the measure for OBGs and the second factor is -0.13 and significant at 5% level. Correlation coefficient between the OBG measure and the factor obtained from factor analysis of two retained factors is -0.77 and significant at 5% level. A preliminary conclusion from these results is that five observed variables can be reduced to two unobserved latent variables. These two unobserved latent variables should have a significant either positive or negative (depending on a variable) relationship to the observed and unobserved OBG variables.

5.4.2. Structural Equation Modeling

Structural equation modeling is used to confirm the results of exploratory factor analysis. In particular, it allows us to confirm the number of dimensions the observed variables can be reduced to and, most importantly, to confirm how the variables are related to each other. The whole purpose of exploratory factor analysis and structural equation modeling is to determine the extent to which the OBG variable constructed based on the external (other than Amadeus data set) sources of information related to a predefined set of variables obtained from the data in a way suggested by the theory and by the definition of OBGs. The exact relationship between variables in the model found in this study can be used in future theoretical and empirical research on the nature of OBGs.

Based on the results of explanatory factor analysis two factors for five operational variables related to the measure of OBGs were retained. These two factors had statistically significant relation with the OBGs measure separately and together when combined in one factor. Preliminary factor analysis showed some patterns for further investigation. In particular, factor loadings of five variables in question can provide some insight on the

relationship of these observed variables to some unobserved factors that influence the true (unobserved) and observed measure for OBGs.

The number of possible unobserved factors that influence the five operational variables under investigation and a true measure of OBGs is suggested by the explanatory part of the analysis. It appears sufficient that two unobserved factors would be retained for confirmatory factor analysis.

Confirmatory factor analysis and structural equation modeling can give rise to a host of competing models, each of which can provide an alternative explanation to the issue under investigation. For the purposes of our analysis (confirmation of validity of the measure of oligarchic BGs) finding exact relationships among the unobserved and observed variables in question is not necessary. What is of interest is to obtaining a model that will provide reasonable fit to the available data and that is not in a disagreement with the results of the explanatory analysis in the first part of this chapter.

Results of confirmatory factor analysis and structural equation modeling are presented in Table 5.2 and Figure 5.2. This analysis was carried out using version 8.14 of LISREL and maximum likelihood estimation (Jöreskog and Sörbom, 1989). Under this method model parameters are estimated in such a way that they maximize the fit between the observed covariance matrix, based on six observables: OBG, State, GM, Concn, PB, Indiv and the covariance matrix implied by the model. In the case of poor fit (high magnitude of Chi-square and low p-values) significant estimated parameters does not play a crucial role.

Low fit is an indicator of an unsatisfactory model. Fit statistics for the structural equation model and measurement models presented in Table 5.2 and Figure 5.2 are as follows: Chi-square = 2.86 with 1 degree of freedom, p-value = 0.09, RMSEA = 0.025, AGFI = 0.99, NNFI = 0.99. Based on these results the chosen model fits the data well.

Thus, the general relationships between two unobserved independent variables (Factor 1 and Factor 2) that influence another unobserved variable (Oligarchic BG) is confirmed. The first factor has positive and significant relationship with the unobserved measure of oligarchic BG (coefficient on this factor is 0.97, p-value-0.00). The second factor has negative and significant relationship with unobserved variable of OBG (coefficient -0.86, p-value 0.00). Model fit (R^2) is 0.68. This result is in accordance with the result obtained in the first part of this chapter (exploratory factor analysis). According to those results, two retained factors had both negative and positive significant relationship to the measure of oligarchic BGs.

The influence of an unobserved true measure for Oligarchic BGs on the observed (created measure) is positive and significant (coefficient 1.04, p-value = 0.00, R^2 = 0.77). The influence of two unobserved factors on the five observed variables chosen to test for validity of created measure for oligarchic BG is also generally significant. The first factor (Factor 1) has positive influence on GM (2.57 and p-value = 0.00); on Indiv (1.69 and p-value = 0.00); on Concn (0.56 and p-value = 0.00); and Pb (0.13 and p-value = 0.00). It has negative influence however on just one variable, State (-1.14 and p-value = 0.00). The first

unobserved factor thus has positive influence in the case when a company is a business group (highest coefficient magnitude), belongs to few individuals with highly concentrated ownership, is publicly traded and private. When these conditions are met (GM, privately owned by few individuals with highly concentrated ownership and is traded on public stock exchanges) the influence of this unobserved factor on the unobserved measure of being an oligarchic BG is positive and significant.

The second factor (Factor 2) has a positive influence on Indiv (1.69 with p – value = 0.00); and negative on State (-0.83 with p -value = 0.00) and Concn (- 0.07 and p -value = 0.03). This second unobserved factor thus has a positive influence on a company being privately owned with its ownership not concentrated in the hands of a few individuals. When a company is privately owned and when its ownership is not concentrated in the hands of a few individuals then this factor has a negative and significant influence on the company to be an OBG.

5.5. Conclusion

In summary, results of confirmatory factor analysis presented in this section show that in order for a company to be affiliated with an oligarchic BG it has to be privately owned group member with highly concentrated ownerships in the hands of few individuals and publicly traded.

Although different combinations of model variables are possible and some very similar alternative interpretations of unobserved factor influence are possible, the chosen model provides good fit and a reasonable interpretation of factors and relationships among

variables. And firstly and most importantly it serves the main goal of our analysis: it allows us to confirm the validity of our measure of OBGs.

We can now turn to the next step in our investigation: testing the main hypotheses about behavior of oligarchic BGs based on the measure. Results of these tests are presented in the next sections.

Table 5. 1 Mean, Standard Deviation and Intercorrelations

Variable	Mean	S.d.	1	2	3	4	5
1.OBG	0.28	0.45					
2. State	0.25	0.44	-0.36				
3. GM	0.34	0.47	0.86	-0.13			
4. Concn	0.45	0.41	0.15	-0.13	0.16		
5. Pb	0.08	0.27	0.15	0.12	0.34	0.09	
6. Indiv	0.07	0.25	0.05	-0.11	0.01*	-0.03*	0.01*
N = 2931; Number of groups = 977. All correlation coefficients are significant at 5% level. *Insignificant at any reasonable level.							

Figure 5. 1 Exploratory Factor Analysis: Plot of Eigenvalues

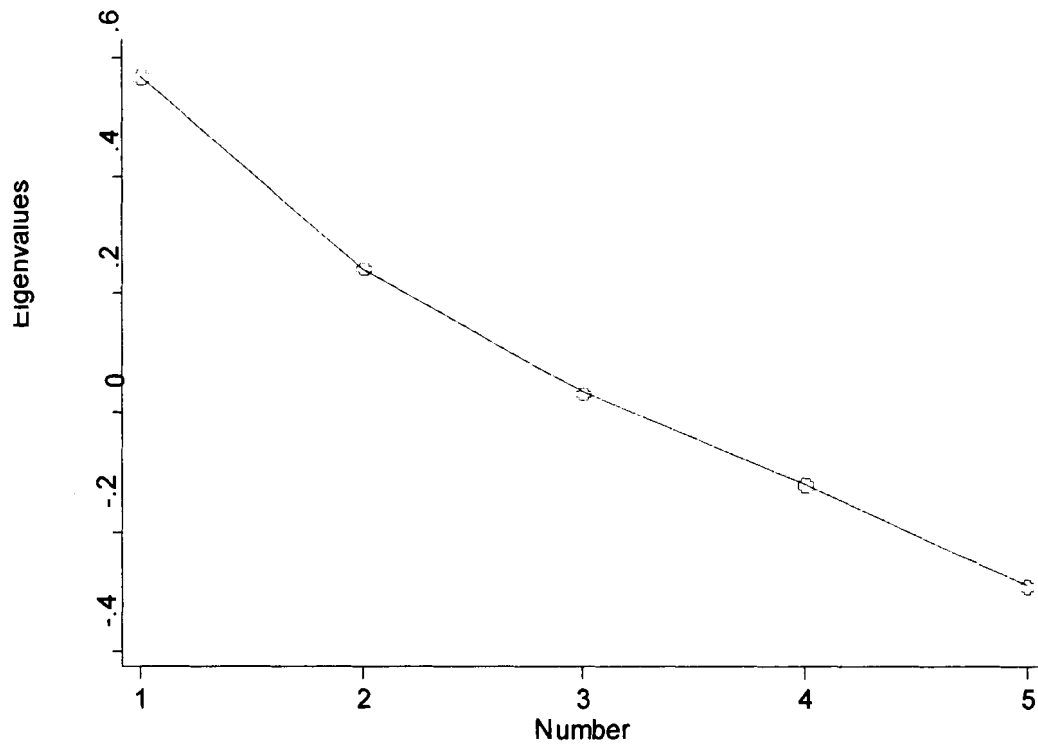
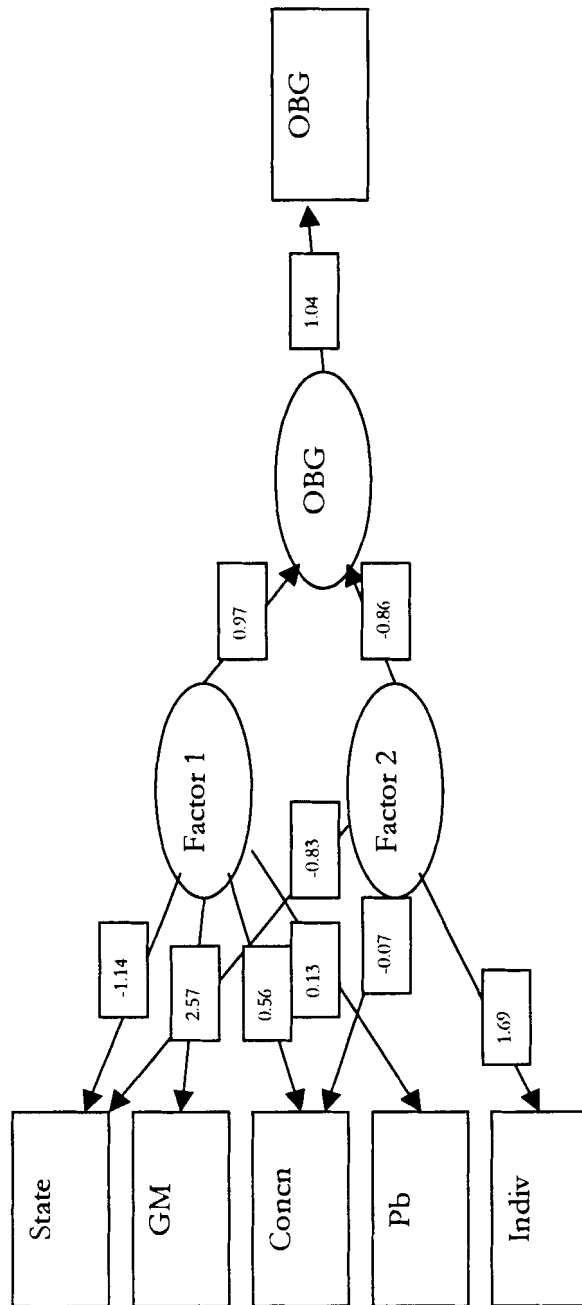


Table 5. 2 Defining OBG: Structural Model

Structural Equation	
OBG = 0.97 Factor 1 - 0.86 Factor 2	R2 = 0.68
Measurement Equations	
OBG = 1.04 OBG	R2 = 0.77
State = -1.14 Factor 1 - 0.83 Factor 2	R2 = 0.33
GM = 2.57 Factor 1	R2 = 0.89
Concn = 0.56 Factor1 - 0. 07 Factor 2	R2 = 0.48
Pb = 0.13 Factor1	R2 = 0.04
Indiv = 1.69 Factor 2	R2 = 0.66
All equations' coefficients are significant at 5% level.	

Figure 5. 2 Defining OBG: Structural Model



Chapter Six

Profitability

6.1. Introduction

To test the relationship between OBGs firm affiliation and a firm's financial performance ROA, as a general measure of firms' profitability, was used. ROA is calculated as income net of taxes divided by the total assets. There are certainly different ways to measure firms' financial performance, but we decided to choose ROA, as it has been the most widely used measure in related studies of business groups performance (e.g. Caves and Uekusa, 1976; Nakatani, 1984; Khanna and Palepu, 2000, Lincoln and Gerlach, 2004).

As was noted in previous sections, most studies on group affiliation in developing countries have shown positive relationship between groups affiliation and profitability (Khanna and Palepu, 2000; Khanna and Rivkin, 2001). Among the main reasons for group affiliation being generally profitable in emerging markets are market failures caused by information and agency problems. Transaction costs theory (Coase, 1937; Williamson, 1985) suggests that the optimal structure of a firm depends on the institutional context. In contrast, studies in the academic literature on business groups' affiliation in the developed countries (e.g. the USA) have shown that diversified firms generally underperform undiversified counterparts. The reasons are inefficient allocation of capital, poor internal governance leading to poor decisions, etc. (e.g. Montgomery, 1994; Shin and Stulz, 1998). Empirical evidence on the influence of group affiliation on profitability collected in academic studies all over the world and in particular in Japan prompts to suggest that the goal of OBGs might be different from a pure profit maximization goal. In particular, studies on group

affiliation in Japan have shown evidence of the intervening and stabilization role of Japanese keiretsus and their non-profit maximization role. Stabilization and redistribution effects of business groups affiliation on firm's profitability has been extensively studied on examples of Japanese business groups (e.g. Gedajlovic and Shapiro, 2002; Lincoln and Gerlach, 2004). Foundation studies by Caves and Uekusa (1976) and Nakatani (1984) showed that the Japanese keiretsu are generally less oriented towards profit maximization goal than the independent firms. This fact was considered as a general disadvantage of business groups in Japan. More recently Gedajlovic and Shapiro (2002) examined the relationship between ownership structure and financial performance of more than 300 Japanese corporations over five year period and found generally positive relationship between ownership concentration and firm profitability. However, they also found a more pronounced profit redistribution effect within the context of business groups characterized by transferring of financial resources from more to less profitable firms.

Lincoln and Gerlach (2004) find that the impact of big-six business groups affiliation on a Japanese firm's performance is conditional on the prior performance of that firm. They find that weaker firms do better and stronger firms do worse. But contrary to Caves, Uekusa and Nakatani, they conclude that business groups' ties enhance and do not impair performance, as enhancement of performance takes the form of intervention on behalf of a weaker partner.

In this context the influence of OBGs affiliation in Russia on firms' profitability should be more profitable than not, as the Russian market is still in the process of its development.

Information asymmetry, agency problems, and general market inefficiency are common. At the same time, the level of economic development of modern Russia inherited from the Soviet Union era as well as external shocks caused by transition from planned to market economy might play significant roles as well. For example, a general profit maximization goal might not be the best strategic decision for economic agents under these circumstances. In the long run the goal of profit maximization might be achieved if the distractive influences of external shocks of the transitional period are avoided or minimized, so that the general structure of an economic unit is preserved in order to perform its goals in future. Based on the above discussion we would make the following statements on the behavior of oligarchic BGs in Russia.

Hypothesis 1.a. Affiliation with OBGs has positive but weak influence on the profitability of affiliated firms.

Hypothesis 1.b. Affiliation with OBGs should benefit more the weaker firms in the group due to the redistribution effect of oligarchic OBGs on profits.

We now turn to the results of statistical analysis of influence of OBGs affiliation on profitability based on the available data.

6.2. Descriptive Statistics

The relationship between OBG and profitability measured by ROA is positive but weak (Table 6.1.A and B). The correlation coefficient is 0.02 and is not statistically significant.

Generally ROA is higher for OBG firms (mean = 0.071, st. error = 0.008) than for non-OBGs (mean = 0.064, st. error = 0.003) firms but this difference is not statistically significant ($t = 0.82$ with 1051 d.f., $p\text{-value} = 0.4$). The difference between mean values of ROA lagged once is statistically significant (mean = 0.11, st. error = 0.01 and mean = 0.09, st. error = 0.005 for OBGs and non-OBGs respectively; mean difference $t = -2.59$, $p\text{-value} = 0.00$). The correlation of OBG firms with values of ROA lagged once is higher than with ROA's present values and statistically significant (coefficient = 0.09; $p\text{-value} = 0.00$, Table 6.2.A. and B).

According to these results, OBGs have slightly higher ROA than non-OBGs but their relationship with profitability remains vague. The higher correlation of OBGs with past than with present values of ROA might suggest some directions for future research.

6.3 Profit Redistribution and OBGs

In this context it is of an interest to examine the influence of OBGs on firms' profitability keeping in mind possible intervention and profit redistribution goals of OBGs and not the profit maximization goal *per se*. Available academic studies on group affiliation in Russia and performance of OBGs have not examined the issue of influence of OBGs on firms profitability from this angle. However, available evidence on group affiliation and stabilization effects in Japan, as well as some statistical analysis on the relationship between OBGs and ROA presented in this section, make this hypothesis worth testing.

Statistical analysis on intervention and stabilization role of OBGs in terms of profitability reveals the pattern.

Figure 6.1. shows the results of regression analysis of ROA_{jt} and ROA_{jt-k} for OBGs and non-OBGs. The regression line for OBGs is generally flatter than for non-OBGs. To the left from the point where the two regression lines cross, ROA of firms affiliated with OBGs is higher than for non-OBGs affiliated firms. The situation is the reverse to the right from the crossing point. Thus, for firms with lower profitability (left from the crossing point) affiliation with OBGs is beneficial. However, when the threshold is reached OBG firms underperform the non-OBGs. This story on the relationship between OBGs' affiliation and profitability measured by ROA shown in Figure 6.1 is very similar to the situation with groups and non-groups affiliated companies and profitability redistribution and intervention effects within business groups in Japan (Lincoln and Gerlach, 2004).

Following a number of previous studies (Gedajlovic and Shapiro, 2002; Lincoln and Gerlach, 2004) in order to test the hypothesis regarding the stabilization role of OBGs in Russia in a more rigorous way the following model is specified:

$$ROA_{jt} = \beta_0 + \beta_1 x_{jt} + \lambda OBG_{jt} + \gamma ROA_{jt-k} + \delta OBG_{jt} * ROA_{jt-k} + \epsilon_{jt} \quad (6.1)$$

$$\epsilon_{jt} = \epsilon_{jt} + \epsilon_{jt}$$

where subscripts j and t represent the firm and year respectively, subscript k is number of time periods, β_0 is a model intercept, β_1 is a vector of regression slopes, x_{jt} is a vector of

independent variables, *OBG* is a measure of firms affiliation with OBGs, ε_{jt} is a disturbance term, α_{jt} is a firm and year individual effect and η_{jt} is a random error.

Descriptive statistics and correlations of variables that were used to test equation 6.1 are presented in Tables 6.2.A and 6.2. B. Equation 6.1 was estimated twice: once for a sample set consisting of 977 companies over two years (1998 and 2000), and the second time it was estimated on a sample of 977 companies over three years (1998, 2000 and 2001).

Variables in Tables 6.2.A and B are as follows: LogAssets is a logarithm of total assets, Sales Growth is a relative growth in sales to previous year; Solvency Ratio is a ratio of a company's debt to a company's equity; ROA and OBG are the same variables as described previously; LagROA is the past values of ROA. As seen in Tables 6.1.A. and 6.2.B, correlation among the independent variables is not very high, although most coefficients are significant. Multicollinearity therefore should not be an issue with estimation of equation 6.1. Estimation of equation 6.1 on panel data requires assumptions with respect to the individual effects (α_{jt}) of each observation and structure of the error term. If the individual component of the error term is assumed to be uncorrelated with the independent variables and invariant over time, the model can be estimated with a random effects specification and fixed effects otherwise.

The estimation of a fixed effects model therefore presents general problems when the number of companies is very large and the number of time periods is small, because the degrees of freedom are limited. Additional problems are created when the specification

includes categorical variables (such as the OBG term). In fact it was not possible to obtain reliable parameter estimates when the fixed effects model was attempted on three years' sample allowing for separate firms and years intercepts.

Since the assumption of fixed effects in this case is plausible, we attempted to compare fixed and random effects estimates using in other ways. The difference between fixed effects estimates and random effects in the case of a correctly specified model is in the efficiency of fixed effects estimator. We therefore attempted to obtain preliminary estimates of a fixed effects model using a larger sample containing observations from two to five years and no OBG variable and found that generally the difference among parameter estimates of fixed and random effects specifications was not great. This suggests that random effects model should provide correct description of the state of the world with our sample. Therefore we decided that the random effects estimation procedure is appropriate, given the specific characteristics of our panel data (small T and large N).

A fixed effects model might be preferable, since with a large number of different companies it is desirable to account for diversity and heterogeneity of firms within the sample. Fixed effects specification allows us to control for the unobserved heterogeneity of companies within the sample that the random effects model can not provide. However, when the number of panels is large and the number of time periods is small estimation of a fixed effects model is not possible under conventional statistical methods.

As a number of econometricians have argued, the fixed effects estimator is biased and inconsistent in some cases of panel data estimation. For example, Baltagi and Kao (2000), p. 40 argue that: "...it is well known that for typical micro-panels where there are a large number of firms or individuals (N) observed over a short period of time (T), the fixed effects (FE) estimator is biased and inconsistent (since T is fixed and $N \rightarrow \infty$), see Nickell (1981) and more recently Kiviet (1995, 1999). In macro – panels studying for example long run growth, the data covers a large number of countries N over a moderate size T . In this case, T is not very small relative to N . Hence, some researchers may still favor FE estimator arguing that its bias may not be large. Judson and Owen (1999) performed some Monte Carlo experiments and found that bias in the FE can be sizable, even when $T = 30$. The bias of the FE estimator increases with the coefficient attached to the lagged value of the dependent variable in the dynamic panel data model with lagged dependent variables and decreases in T . But even for $T = 30$, this bias could be as much as 20% of the true value of the coefficient of interest. Therefore we decided that the random effects estimation procedure is the right way to go, given specific characteristics of our panel data (small T and large N).

Some studies (e.g. Chang, 2003) on the relationship between ownership concentration and profitability have found that the fixed effects model that allows accounting for unobserved heterogeneity can reverse the direction of causality from performance to concentration. However, we found no evidence of such reverse causality when the fixed effects model was estimated on a larger sample (two to five years). Percentage of shares held by the direct shareholder was used as a proxy for ownership concentration variable in that case.

Estimation results of a random effects model with a lagged dependent variable (ROA), effects of OBGs affiliation and control variables are presented in Tables 6.2.A and 6.2.B. Table 6.2.A also shows the results of Arellano Bond regression. The model in equation 6.1 could be estimated by the method suggested by Arellano and Bond, if not for the effects of time-invariant independent variables which are of main interest. The Arellano Bond method allows for estimation of lagged distributed dependent variables models by taking first differences of variables in the model. In such a way the influence of time invariant effects (OBGs affiliation) is lost. As noted above, using the Arellano Bond procedure on each group separately produces the results reported in Figure 6.1.

We estimated the model in equation 6.1 by means of GLS with heteroskedasticity consistent standard errors. Examination of model A (estimation of a model with no controls) in Table 6.2.A and 6.2.B shows that the effect of OBGs on changes in ROA is positive in both cases, but only in one case it is found to be significant (3 years sample. 0.03, p-value = 0.02). The influence of past values of ROA on its present values is found to be positive and significant in both cases too (0.57, p – value = 0.00 and 0.47, p –value = 0.00 for 2 and 3 years samples respectively). Interaction of OBG affiliation with past values of ROA is found to be negative in both cases and significant as well (-0.16, p – value = 0.10; -0.17 p-value = 0.03), although the interaction is weakly significant in the two years sample case. Generally speaking, the interaction between the OBG variable and past values of ROA plays a negative role in these equations. Coefficients on interactions are also second largest in terms of magnitude after the coefficient on the lagged value of ROA.

Estimation of the model in equation 6.1 with control variables on two samples of two and three years are presented in Tables 6.2.A and 6.2.B (model B). We estimated these models with dummy variables for industry and region of the country, based on NACE and postal codes (shown for the 3 year sample only) and found that these effects did not change the results. As is seen from Table 6.2.B (model B) the logarithm of Assets variable that is usually used to control for the size was found to be significant (0.005, p-value=0.04). Variable Location is based on 3-digit postal codes. It was found to be insignificant (-0.00, p-value=0.26). The variable for industry based on 4-digit NACE codes was found to be significant (-0.005, p-value 0.03). Correlations between ROA and LogAssets in Tables 6.1.A and 6.1.B are insignificant. However, the correlation between LogAssets, the OBG dummy, and the interaction between OBG and LagROA is high and significant. Inclusion of the LogAssets variable into the model contributes to the collinearity problem (see also Table 6.3.A model C.1). On the other hand, inclusion of the variable Solvency Ratio allows us to control for the size of a company. And since ROA is a ratio of income to total assets, the main variables in this model are already scaled by total assets that helps to control for the size. Controlling for the size is also achieved with OBG variable. Therefore it appears that inclusion of LogAssets variable is redundant and unnecessary. Specification of a similar model in Lincoln and Gerlach (2004) does not include LogAssets as an independent variable.

The coefficient on the sales growth term was found to be significant but it did not affect the other results. As this variable will be used for further analysis and for consistency of results

presented herein, we did not include the sales growth coefficient estimate in Tables 6.2.A and 6.2.B. The remaining control variable consistently shown in the tables is the Solvency Ratio. It is significant for both samples (two and three years) but its inclusion does not affect the general results, except for the fact that the magnitude of the parameter estimates on interaction term between OBG and lagged values of ROA becomes higher. Thus, the same results that were found when a general model of OBG affiliation and profitability was estimated without controls, hold when controls were introduced.

The influence of OBGs on ROA is positive in both samples but only in the case of the three year sample is it significant (0.04, p – value = 0.00). The same result was found in the general model with no controls. The influence of lagged values of ROA on its present values is found to be large in magnitude (largest coefficient estimate in all regressions) and statistically significant (0.57 and 0.41, 0.47; p -values = 0.00 and 0.00 for 2 and 3 years samples respectively). Interaction of OBGs with lagged values of ROA is negative and significant (- 0.28 and - 0.26; p -values = 0.00 and 0.00 for 2 and 3 years samples respectively).

If the model's predictions in equation 6.1 are consistent with the stabilization and intervention hypothesis on the role of oligarchs and patterns revealed in Figure 6.1, then our expectations on the signs of coefficients attached to the OBG and interaction variables are evident. The long-term influence of OBG on profitability is measured by δ . If the model is in the agreement with the patterns shown in Figure 6.1 then the sign of δ has to be negative. This is what the estimation results of equation 6.1 in Tables 6.2.A and 6.2.B

show. In both cases, models estimated on two and three years samples with and without controls have negative and significant parameter estimate on the interaction of oligarchs and profitability.

The general difference between OBGs and non-OBGs in terms of their influence on present profitability in equation 6.1 is measure by the intercept parameter. If OBGs goal is profit maximization then the sign of this parameter estimate has to be positive. Results of estimation of equation 6.1 in Tables 6.2.A and 6.2.B show that generally OBGs influence on present profitability is positive but weak. Only in two cases out of four were parameter estimates found to be significant.

6.4 Endogeneity

The model in equation 6.1 and its estimation results in Tables 6.2.A and 6.2.B treat relationships between OBGs affiliation and profitability as given. In particular, it is assumed that the direction of causality between OBGs and profitability is a one-way street. OBG affiliation affects profitability and not vice versa.

However, some studies have shown that the relationship between ownership concentration, group-affiliation and profitability is not clear-cut (Cho, 1998; Demsetz, 1983; Kole, 1996; Loderer and Martin, 1997; Chang, 2003, Black, Jang and Kim, 2004).

Demsetz (1983) argued that ownership structure is conditional on the costs and benefits of ownership, and thus could be endogenous. Kole (1996) suggested that managerial compensation is endogenous to contracting. Cho (1998) used simultaneous equations estimation to show that corporate value affected ownership structure and not vice versa.

Loderer and Martin (1997) found that acquisition performance and firm value affected the size of managers' stockholdings, but not the other way around. Chang (2003) used a sample of group-affiliated public firms in Korea and examined simultaneous causality between ownership structure and performance. He found that in most cases performance determines ownership structure and not vice versa. To determine causality effects he controlled for unobserved heterogeneity among firms and years, as well as for endogeneity. To control for endogeneity he used an instrumental variable approach and 2 stage least squares estimation. Black, Jang and Kim (2004), in a study on corporate governance effects on market values of Korean firms, used a similar approach to control for endogeneity of variables and causality effects.

This section presents the test of the model in equation 6.1 when endogeneity between oligarchic BG affiliation and profitability is controlled for. In this section instead of one general equation 6.1, we estimate the following system of two equations:

$$ROA_{ijt} = \beta_{10} + \beta_{11} \mathbf{x}_{ijt} + \beta_1 OBG_{ijt} + \beta_{12} SalesGrowth_{ijt} + \beta_1 ROA_{ijt-k} \\ + \beta_1 OBG_{ijt} * ROA_{ijt-k} + \varepsilon_{ijt}$$

$$OBG_{2ijt} = \beta_{20} + \beta_{21} \mathbf{x}_{ijt} + \beta_2 ROA_{ijt} + \beta_{21} ROA_{ijt-k} + \beta_{21} PubliclyTraded_{ijt} + \varepsilon_{2ijt} \quad (6.2)$$

All parameters and variable abbreviations have the same meaning in equations 6.2 as in equation 6.1. Equations 6.2 are estimated with 2SLS and instrumental variables approaches. An assumption about random effects holds. The equation for OBG is estimated

by logit due to the binary nature of this variable. As can be seen, the equation with OBG as a dependent variable does not have an interaction term between OBG and lagged ROA. As OBG is a dependent variable in this case, regression of it on the interaction with ROA is not possible. OBG is a time invariant variable. No lagged values of it are available.

The only problem with estimation of the system of equations in 6.2 is a choice of useful instruments. The instruments for ROA and OBG have to be chosen in such a way that they are exogenous and uncorrelated with the error term at the same time they have to be closely related to the two variables of interest. Following some previous studies (e.g. Chang, 2003), we decided to instrument ROA with the sales growth variable in the case of two years sample. Sales growth is an indicator of group-affiliated firms' performance in the study on Japan (Lincoln and Gerlach, 2003). According to the results in Table 6.1 A and 6.1.B, the correlation of Sales Growth with ROA is positive, relatively high and statistically significant.

Usually lagged values of the same variable can be used as instruments too. However, since one equation in 6.2 is based on a lagged-dependent variable, lagged ROA is already an instrument for a two years sample. Correlation coefficients of residuals saved from the regression of the main equation 6.1 with chosen instruments for ROA was not significant.

The choice of instruments for OBGs was not that clear. Some previous research on group-affiliation and performance in Russia (Perotti and Gelfer, 2001) suggested that group-affiliated firms invest more in fixed assets than non-group affiliated firms. Anecdotal

evidence on the behavior of oligarchs suggests the same pattern in their behavior (Hoffman, 2003). We decided not to use total assets to instrument OBG with the variable LogAssets, as total assets and ROA are related and the endogeneity problem remains.

Research by Perotti and Gelfer (2001), and Estrin (2002) suggests that business groups in Russia might have better access to external funds including issuing shares for trading on public stock exchanges. According to the results shown in Table 6.1 A and 6.1.B, only around 10% of companies in our samples are publicly traded. Descriptive statistics of the variable for publicly traded companies with respect to OBGs and non-OBGs showed that the vast majority of public companies are affiliated with OBGs. Correlation of OBGs with dummy for publicly traded companies is relatively high and significant as well.

According to Tables 6.1.A and 6.1.B, the correlation between OBG and the dummy for publicly traded companies is positive, relatively high and statistically significant. The correlation between the dummy for public trade and ROA is positive but only weakly significant. Correlation between residuals saved from original regression and dummy for public trade was not significant.

As only one instrument for each instrumented variable was used, the system of equations in 6.2 is just identified. Table 6.3.A. presents the results of two-stage least square instrumental variables estimation (IV 2SLS) of the system of equations in 6.2. Table 6.3.A shows the results of this estimation for the three years period sample.

According to these results, OBGs have positive and consistently significant influence on ROA in all cases (including models with control variables). Its magnitude varies from 0.12 to 0.30 for the three years sample, p -values = 0.00 for the general model and the model with controls respectively.

Lagged values of ROA have a positive and significant at 10% level (model A.1) influence on present values of ROA. Parameter estimate is 0.14. Parameter estimates of LagROA term are insignificant in all other models. Parameter estimates for the interaction between OBGs and profitability are negative and consistently statistically significant in all but one case. They vary from -0.29 to -0.44 with p -values = 0.00 for the general model and the model with controls respectively.

According to these results, OBGs have a positive and significant influence on ROA in all cases (including the model with control variables), but not the other way around. The magnitude of the coefficient on ROA in the equation with OBG as dependent variable varies from 0.18 to 1.33 depending on the model specification but it is significant only in half of the cases.

Lagged values of ROA have a positive and insignificant influence on present values of ROA and on OBG when OBG is a dependent variable. In the case of the model estimated with controls only, Solvency Ratio and LogAssets have significant impact on OBG as a dependent variable. Inclusion of additional control variable LogAssets in the equation for OBG generally does not change the results (except for the model C.1. in Table 6.3.A). In

this case the correlation between LogAssets and OBG variables is very high (0.94) and collinearity affects all parameter estimates in this model.

Model fit is generally lower in the case of IV estimation of equations with OBG as dependent variable in 6.2 than in the case when the dependent variable is ROA. For a two years sample, R-square values are around 2% and 7% in the case of IV estimation of logit model on OBG and around 15% for a model with ROA as a dependent variable.

This would suggest that direction of causality goes from OBG to ROA and not the other way around. Model fit is higher in the case when ROA is a dependent variable and OBG is not. The Hausman test failed while testing equality between OLS and 2SLS IV estimates in some cases. Model C.1 is affected by a collinearity problem. The results of this test are inconclusive. Also, ROA and LagROA as independent variables in the equation with OBG as dependent variable are insignificant in most cases (ROA is not significant in half of the cases). IV estimation performed on a different number of companies with different lag lengths (not shown) are generally more supportive of the notion that the direction of causality is from OBG to ROA and it is not reversed. These results seem hardly surprising, since some anecdotal evidence to date suggests that oligarchs are looking for “cash cows” and not necessarily for profitable firms (Hoffman, 2003).

6.5. Conclusion

Results of 2SLS IV estimation are supportive of GLS estimation results. Even when model variables are substituted with instruments the relationship between OBGs and profitability shown in Figure 6.1 holds. Interaction between OBGs and ROA is consistently negative in

all cases. Based on results of IV estimation there is no strict evidence of reverse causality between OBGs affiliation and firm profitability.

These results are generally supportive of our hypothesis 1.b. that the main goal of OBGs is redistribution of profits among affiliated firms. However, they are not totally supportive of the hypothesis 1.a. that the goal of OBGs is profit maximization *per se* and that affiliation with OBG has positive influence on the member firms' profitability. The affiliation with OBGs does have positive influence but it is not found to be significant at a reasonable level in some cases. This result might suggest that weaker firms benefit from such practices (profit redistribution) more, as in the case with group-affiliated companies in Japan (Gedajlovic and Shapiro, 2002; Lincoln and Gerlach, 2004).

This result does not automatically imply total similarity between OBGs in Russia and BGs in Japan. It shows similarity between them on one dimension. One of the reasons for profit redistribution under condition of Russian market might be response to external shocks of the transitional period and market failures. As was noted before, redistribution of profit might be intended to help weaker (but vitally important for the functioning of the whole group) members of OBGs structure to survive in the volatile environment. But it also might be due to purely selfish opportunistic value transfer or both reasons, as was also noted before.

This result is also supportive of the study by Perotti and Gelfer (2001) on Russian business groups where extensive financial relocation was also found. They conclude that such

relocation was either due to transfer of funds to firms with better investment opportunities or opportunistic values transfer. While some weaker firms might have better investment opportunities at some point, this is not necessarily true for all firms and all situations. The pattern of profit redistribution found in this section suggests that OBGs might have other reasons for transferring funds other than better investment opportunities.

Figure 6. 1 Arellano Bond Regression of ROA_t on ROA_{t-k} for OBGs and Non-OBGs

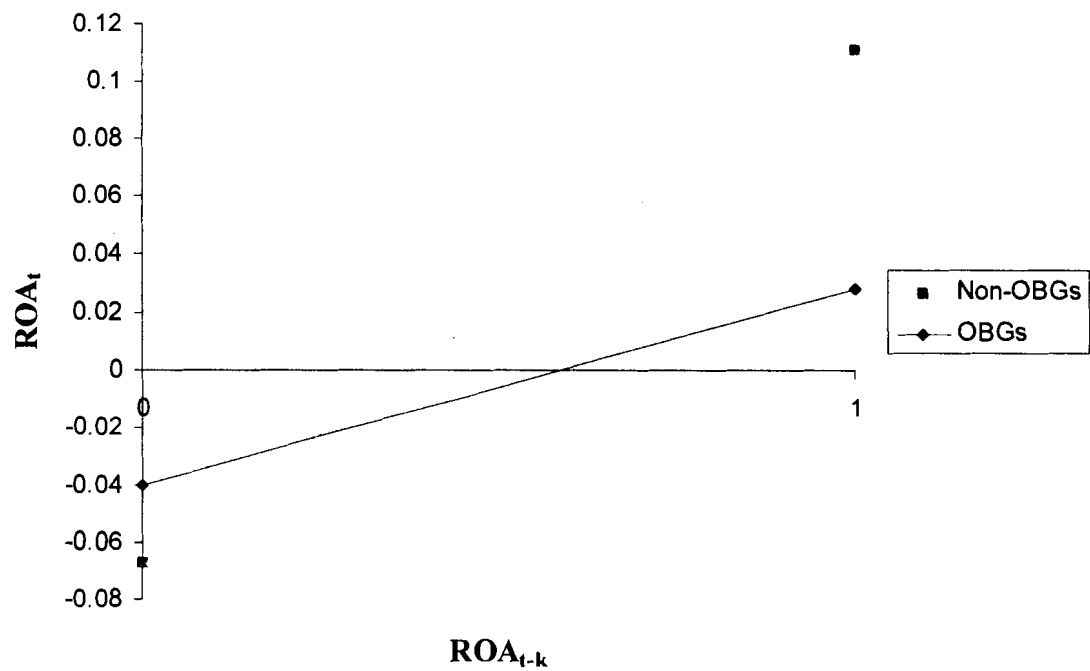


Table 6. 1 A. Descriptive Statistics and Correlations

Variable	Mean	St. Dev.	1	2	3	4	5	6
1.ROA	0.07	0.18						
2.OBG	0.28	0.45	0.02					
3.LagROA	0.10	0.15	0.36*	0.09*				
4. LogAssets	8.97	1.83	-0.01	0.27*	0.06			
5.Sales Growth	0.43	0.72	0.12*	-0.01	-0.09*	-0.04		
6. Solvency Ratio	0.56	0.28	0.22*	-0.07*	0.39*	0.01	-0.06	
7. Publicly Traded	0.10	0.27	0.02	0.15*	0.03	0.50*	-0.03	0.04
*- Significant at 5 % level. 2 years; Number of companies = 977								

Table 6. 1 B Descriptive Statistics and Correlations

Variable	Mean	St. Dev.	1	2	3	4	5	6
1.ROA	0.07	0.18						
2.OBG	0.28	0.45	0.02					
3.LagROA	0.10	0.15	0.32*	0.01				
4. LogAssets	8.97	1.83	-0.01	0.27*	-0.02			
5.Sales Growth	0.43	0.72	0.12*	-0.01	-0.18*	-0.04		
6. Solvency Ratio	0.56	0.28	0.22*	-0.07*	0.24*	0.01	-0.06	
8. Publicly Traded	0.10	0.27	0.02*	0.15*	-0.01	0.50*	-0.03	0.04
*- Significant at 5 % level. 3years; Number of companies = 977								

Table 6. 2. A GLS Estimation Results. Dependent Variable: ROA

Robust St. Errors. Random effects

Model A.			
Variable	Coefficient	Significance	Model Statistics
		P-value	
Constant	0.02	0.02	$R^2 = 0.14$
OBG	0.02	0.52	
LagROA	0.57	0.00	N = 977
OBG*LagROA	- 0.16	0.10	
Model B.			
Constant	-0.02	0.17	$R^2 = 0.14$
OBG	0.04	0.22	
LagROA	0.57	0.00	N = 968
OBG*LagROA	- 0.28	0.01	
Solvency Ratio	0.001	0.00	
Arellano Bond Regression			
Constant	-0.03	0.00	Wald Chi-square
			1 d.f. = 1.17
LagRoa	0.10	0.26	Number of groups
			= 977

Table 6. 2. B GLS Estimation Results. Dependent Variable: ROA

Robust St. Errors. Random effects

Model A.			
Variable	Coefficient	Significance	Model Statistics
		P-value	
Constant	0.05	0.02	$R^2 = 0.12$
OBG	0.03	0.02	
LagROA	0.47	0.00	N = 1954
OBG*LagROA	- 0.16	0.03	
Model B.			
Constant	-0.03	0.26	$R^2 = 0.14$
OBG	0.04	0.00	
LagROA	0.41	0.00	N = 1936
OBG*LagROA	- 0.26	0.00	
Solvency	0.001	0.00	
LogAssets	0.005	0.04	
Location	-0.00	0.26	
Industry	-0.005	0.03	

**Table 6. 3. A IV Regression Estimation Results. Dependent Variables:
ROA, OBG**

Robust Standard Errors. Random effects

Second Stage Equation IV Estimates						
	(A)		(B)		(C) ⁵	
	1	2	1	2	1	2
LagROA	0.14+ (0.09)	-0.01 (0.94)	-0.05 (0.57)	-0.07 (0.20)	-0.65* (0.00)	-0.02 (0.65)
Solvency			0.002* (0.00)	0.003* (0.00)	0.01* (0.00)	0.001* (0.00)
LogAssets					-0.48* (0.00)	-0.02* (0.00)
OBG	0.12* (0.00)	0.26* (0.00)	0.18* (0.00)	0.12* (0.00)	1.43* (0.00)	0.30* (0.00)
OBG*LagROA	-0.32* (0.00)	-0.44* (0.00)	-0.37* (0.00)	-0.24* (0.00)	-0.01 (0.48)	-0.41* (0.00)
Sales Growth	0.05* (0.00)	0.04* (0.00)	0.05* (0.00)	0.05* (0.00)	0.002* (0.00)	0.04* (0.00)
Intercept	0.16* (0.00)	0.30* (0.00)	0.10* (0.00)	0.18* (0.00)	5.29* (0.00)	0.45* (0.00)
R ²	0.17	0.31	0.25	0.32	0.97	0.34
N	1954	1954	1938	1938	1938	1938
Hausman test ⁶ : p-value	0.10	0.04	0.10	0.00	0.00	0.00
*-significant at 5% level						
P-values in parenthesis						

⁵ In model C.1 correlation between LogAssets and OBG is 0.94

⁶ Fitted models in A.1- B.1 failed to meet asymptotic assumptions of Hausman test. Alternative tests are shown. In B.2 and C.2 estimated difference between covariance matrices is not positive definite.

**Table 6. 3. B IV Regression Estimation Results. Dependent Variables:
ROA, OBG**

Robust Standard Errors. Random effects

First Stage Equation LOGIT Estimates						
	(A)		(B)		(C)	
	1	2	1	2	1	2
ROA	0.18 (0.47)	0.70 (0.06)	0.45 (0.13)	1.33* (0.00)	0.67* (0.05)	1.31* (0.00)
LagROA	0.05 (0.88)	-0.14 (0.07)	0.51 (0.18)	0.46 (0.27)	0.47 (0.23)	0.52 (0.20)
Publicly Traded	1.08* (0.00)	1.07* (0.00)	1.14* (0.00)	1.16* (0.00)	0.10 (0.57)	0.07 (0.72)
Solvency			-0.01* (0.00)	-0.01* (0.00)	-0.01* (0.00)	-0.01* (0.00)
LogAssets					0.33* (0.00)	0.34* (0.00)
Intercept	-1.07* (0.00)	-1.10* (0.00)	-0.73* (0.00)	-0.77* (0.00)	-3.63* (0.00)	-3.84* (0.00)
Pseudo R ²	0.017	0.017	0.024	0.021	0.07	0.007
N	2931	1954	2915	1938	2915	1938
*-significant at 5% level						
P-values at parenthesis						

Chapter Seven

Investment

7.1. Introduction

According to some previous research (e.g. Perotti and Gelfer, 2001) on business groups in Russia, hierarchical business groups allocate capital comparatively better than other firms. Perotti and Gelfer (2001) assess the quality of investment process in fixed assets in hierarchical, horizontal groups and non-group firms by estimating investment equation with a proxy for Tobin's Q . They define hierarchical business groups as financial-industrial groups where the bank is in firm control; and horizontal business groups as industry groups, which are looser alliances without common control structure and non-member groups companies.

While some OBGs in Russia can be defined as financial-industrial groups with hierarchical control structure, others are not. Definition of OBGs has a broader meaning than just being a financial-industrial group with hierarchical control structure (or being a horizontal group, see below), including such additional characteristics as ownership through pyramids and family ownership. OBGs also own firms that belong to the industry groups, according to Perotti and Gelfer (2001) classification. (For the complete definition of OBGs see Chapter 4 of this study).

By our definition, that is found to be reliable and valid according to the results of the tests in the previous section, OBGs are business groups with either horizontal or vertical control structure, privately owned with highly concentrated ownership in the hands of few individuals (oligarchs), and publicly traded. While most of publicly traded companies in our sample are affiliated with OBGs, the last condition is not restricted to publicly traded companies.

At the same time conditions that were not tested explicitly in the previous section, such as pyramidal and family ownership, had to manifest their presence in the structural model for OBGs measure, in the form of unobserved latent variable for OBGs. This latent variable had positive and significant relationship with the observed measure of OBGs as well as with two other unobserved factors that influence five observed variables. These variables were used to test five conditions outlined above for a business unit to be an OBG.

Therefore it is reasonable to expect that the complex nature of OBGs could have different implications in terms of investment decisions. From this point of view it would be interesting to examine the investment process by OBGs and non-OBGs in Russia.

This chapter therefore tests the following hypotheses developed earlier in this study (Chapter 4):

Hypothesis 2.a. Holding everything else constant, OBGs tend to invest more in the fixed assets than non-group firms and/or non-oligarchic groups.

Hypothesis 2.b. Holding everything else constant, OBGs are less financially constrained than non-oligarchic firms

Hypothesis 2.c. Holding everything else constant, OBGs have better access to the external financing for their investment projects than non-group firms and non-oligarchic groups.

7.2. Models of Investment Behavior

There are many different ways to describe investment behavior based on different specifications of underlying investment equations. Among them are the Accelerator model based on the rationale for aggregate investment behavior proposed by Clark (1917); the cash flow model that depends on the availability of funds for investments; the neoclassical model that allows for relaxing of some of the assumptions of the Accelerator model (Hall, 1967, 1968); models based on replacement costs of capital proposed by Tobin (1969) as a generalization of initial cash flow model; and combinations and variations of all.

While there are certain limitations related to the model underlying assumptions that make different models perform differently under the same conditions and better than others under different sets of conditions, there is a model that has been extensively used in the academic literature to study implications of group affiliation on investment. This is a model suggested by Tobin (1969), usually called Tobin's Q model. The second probably most popular model is the one that was suggested by Bond and Meghir (1994), modern a modification of the Accelerator model.

As Tobin's Q model has been extensively applied in literature analyzing the influence of business groups on allocation and efficiency of investment (Khanna and Palepu, 2000; Khanna and Rivkin, 1999; Khanna and Love, 2003; Perotti and Gelfer, 2001), we start with this model description.

Tobin's Q model of investment behavior requires special assumptions about the shape and properties of production function, costs function of capital stock adjustments, efficiency of capital and product markets, and some other restrictions. These assumptions also include the rationality of economic agents and profit maximizing behavior. When the assumptions underlying the model are met, the model can be estimated in the following form:

$$I_t = \alpha + \sum_{m=0}^{M-1} \beta_m (q-1)_{t-m} K_{t-m-1} + \beta_k K_{t-1} + \varepsilon_t \quad (7.1)$$

where I is an investment, q is a ratio of assets market value to its replacement costs, Tobin's Q ratio, K is a stock of capital, subscript t is time, m is a number of time periods, and ε_t is a random error.

The Q ratio in this investment model, the shadow value of capital, is usually estimated as a market to book value of a firms' assets. Market value is calculated based on the stock share price and number of shares. A problem with this specification of an investment behavior arises immediately, and not only in the form of quite restrictive underlying assumptions and possible estimation problems of equation (7.1).

While stock prices are a good approximation of the market value of a firm, their application is restricted only to publicly traded companies. In the case of developed economies where the vast majority of large and medium sized companies have established secondary market for their shares and markets are well developed, that might not be an issue. However, in many undeveloped or transitional economies companies do not have established secondary market to trade their shares on.

Other model assumptions related to the behavior of economic agents, and especially to the degree of efficiency and frictionless nature of capital and product markets, also make its application limited in some cases.

An alternative specification to the model of investment behavior that allows estimating of equations in the absence of stock markets can be found in the Accelerator model. This model was proposed as early as the beginning of the previous century. The model is based on the main underlying assumption that the ratio of capital to output is fixed in the sense that price, interest rates and taxes have only an indirect affect on capital spending. The model can be specified in terms of investments behavior as a function of time series of output and capital in the following way:

$$I_t = \alpha + \sum_{m=0}^{M-1} \beta_m Y_{t-m} K_{t-m-1} + \beta_k K_{t-1} + \varepsilon_t \quad (7.2)$$

where Y is a firm's output .Other variable and index abbreviations are the same as before.

As can be seen from the equation 7.2, investment behavior of a firm does not have to be dependent on its market values and no information of stock shares prices is necessary for its estimation. While the assumption about fixed output to capital ratio is certainly very restrictive, the model becomes a very attractive way of specification and estimation of investment equations in the cases of absence of the stock market prices. It also becomes an alternative when there are reasons to believe that information asymmetry on the stock markets makes approximation of a market value of a firm with its stock share prices unreliable.

Over the course of its life the Accelerator model has had different extensions. Some of the most recent (e.g. Bond and Meghir, 1994) allow for accounting for external and internal financial constraints as well as for possible agency problems.

The model in 7.2 can be augmented by debt-financing to account for external financial constraints, internal cash flows and stocks of cash and cash equivalents, in order to take internal financial constraints on investment decisions into consideration; as well as profitability, ownership by state to account for possible agency problems, and some others. It also allows for testing for a better functional form of investment equation by introducing squared lagged term of investment in the previous period to the main equation.

We can now turn out attention to the empirical application of modeling of investment behavior of OBGs and non-OBGs in Russia.

7.3. Descriptive Statistics

In order to apply the Tobin's Q model of investment to the data, as in Perotti and Gelfer (2001), it is necessary that the companies from the selected sample have an established secondary market for their shares. As already pointed out, Tobin's Q is a shadow value of an additional unit of capital. It is calculated as the market values of the firm to the replacement costs of capital. As secondary market in Russia is quite small and not well developed, application of Tobin's Q model presents serious problems in terms of representative ness of a sample. As Perotti and Gelfer (2001) point out, their sample of companies, used to test Tobin's Q investment equation, is not representative of Russian business groups.

As the results of descriptive statistics in Table 5.1 A and 5.1.B show, our sample of companies that have established secondary market for their shares is certainly not representative either. Only around 10% of companies in our sample trade their shares on public stock exchanges. While most of them have affiliation with OBGs, not all OBGs-affiliated companies are publicly traded. Application of Tobin's Q model to test investment decisions by OBGs and non-OBGs will result in leaving out around 90% of data from the available sample.

As a remedy to this problem, we estimate the investment equation using the Accelerator model type of investment equation. It is similar to the Perotti and Gelfer (2001) estimation but without proxy for Tobin's Q . The equation has to be estimated on a whole sample of companies but without proxy for Tobin's Q . Estimation results are presented later in this section.

Table 7.1 shows descriptive statistics of variables relevant to the analysis of investment behavior of OBGs. As can be seen from the table, distribution of fixed assets among OBGs, non-OBGs and total sample averages is similar in terms of the direction of trend changes and is different in terms of values of fixed assets.

OBGs on average had more than twice of the value in fixed assets than non-OBGs and the total sample average at the beginning of the time period. There was a significant decline in terms of value of fixed assets for the period of two years from 1998 to 2000 across all companies (1998 was a year of crisis in Russia). By the following year (2001) the average value of fixed assets owned by OBGs had increased the same as non-OBGs and the total sample average. The value of fixed assets owned by non-OBGs is slightly lower by the end of the time period than that owned by OBGs. Fixed assets scaled by total assets are higher for OBGs than for non-OBGs as well, but it is significant for the years 2000 and 2001. The means difference for 2001 is weakly significant.

The average trend with respect to fixed assets change is that they almost doubled for the period from 2000 to 2001 for all categories. The trend was reversed in 1998 - 2000, when the value of fixed assets decreased significantly for all categories. The value of fixed assets is certainly overstated in 1998 and understated in 2000. The pattern in terms of the magnitude change of the value of fixed assets over a period of one year is not unusual for the Russian market. Perotti and Gelfer (2001) in their study on investment behavior of business groups in Russia in 1996 and 1997 found the same pattern. We also have to bear

in mind that 1998 was a year of crisis in Russia. In addition we lack data for OBGs for the year 1999.

Average cash flow to total assets ratio is statistically the same for OBGs and non-OBGs on average over three years and with respect to each year. Though it is higher in all cases for OBGs, it is also more volatile. In terms of investment to total assets ratio there is a significant difference between OBGs and non-OBGs for the year 2001 (t-statistics = -2.97 with 719 and 743 d.f., p-value = 0.00) in the favor of OBGs. There is evidence that OBGs invested more in the year 2001.

There is a significant difference in terms of scaled debt for OBGs and non-OBGs, including total and bank debt over all time periods. Bank to total assets ratio and total debt to total assets ratio are significantly larger for OBGs than for non-OBGs. These findings provide additional support to the idea expressed previously in the literature that OBGs might have better access to financing, including bank and other sources of short and long-term debt. Non-OBGs firms are at a disadvantage in this respect in comparison to OBGs.

There is an interesting pattern in terms of cash and cash equivalents to total assets ratios. The difference between oligarchic BGs and non-oligarchic firms is large and statistically significant on average over three years and with respect to the years 2000 and 2001. However, OBGs on average appear to bear significantly less cash than non-OBG firms for the given period of time. Holdings of cash and cash equivalents by OBGs are on average smaller than their counterparts. These results might suggest redistribution of cash or better

access to cash and its equivalents that does not require OBGs to keep significant amounts for immediate usage (this result is similar to that reported by Perotti and Gelfer, 2001).

There is no significant difference in terms of accounts payable scaled by total assets between OBGs and non-OBGs on average over three years and with respect to each year, except for 1998 when it is weakly significant. Accounts receivable are statistically the same for OBGs and non-OBGs on average over three years and with respect to each year (not shown).

In terms of employment OBGs affiliated firms on average are twice as large as non-affiliated with OBGs and volatility of their employment is significantly higher too. However, employment does not play significant role in terms of investment equations. Table 7.1 also shows intercorrelations. Correlation among main financial variables is not very high. Fixed assets investment to total assets ratio is positively related to cash flows to total assets ratio and cash and cash equivalents to total assets ratio (correlation coefficients are 0.17 and 0.08) . On average over three years and for all companies investment in fixed assets was financed from cash flows and cash equivalents. The correlation between these two variables is not very high (0.06) though it is significant. These two variables are related but they are not the same (see discussion in the next section).

7.4. Estimation Results

Next we turn to testing of a standard investment equation based on the Accelerator model. This model can be complemented by a different measure for financial constraints (cash flows, liquid assets) and agency problems (profitability, solvency, and private group and

government ownership). The main difference between this model and Tobin's Q is the entrance of output variable in the Accelerator model case instead of shadow value of capital as in the Tobin's Q model case.

The Accelerator model is preferable under conditions of the Russian market and limitations on the number of companies that have established secondary market for their shares. Following Perotti and Gelfer (2001), we used the specification of these investment equations as given below:

$$I_{jt} / K_{j(t-1)} = \beta_0 + \sum_{k=0}^1 \beta_1 Q_{j(t-k)} + \sum_{k=0}^1 \beta_2 CF_{(t-k)j} / K_{(t-1)j} + \sum_{k=1}^2 \beta_3 Debt_{(t-k)j} / K_{(t-1)j} \\ + \beta_4 IBT_{jt} / K_{(t-1)j} + \sum_{k=1}^2 \beta_5 Cash_{(t-k)j} / K_{(t-1)j} + \varepsilon_{jt} \\ \varepsilon_{jt} = \alpha_{jt} + \eta_{jt} \quad (7.3)$$

$$I_{jt} / K_{j(t-1)} = \beta_0 + \sum_{k=0}^1 \beta_1 Y_{j(t-k)} / K_{(t-1)j} + \sum_{k=0}^1 \beta_2 CF_{(t-k)j} / K_{(t-1)j} \\ + \sum_{k=1}^2 \beta_3 Debt_{(t-k)j} / K_{(t-1)j} + \beta_4 IBT_{jt} / K_{(t-1)j} + \sum_{k=1}^2 \beta_5 Cash_{(t-k)j} / K_{(t-1)j} + \varepsilon_{jt} \\ \varepsilon_{jt} = \alpha_{jt} + \eta_{jt} \quad (7.4)$$

where I is the change in fixed assets for the period, K is a value of total assets in the previous period, CF is the past and present firms internal cash flows that are calculated as after-tax income less changes in inventories and accounts receivable plus changes in account payable, $Debt$ is a value of the company's total past period debt, IBT is a firm's present period income before taxes, $Cash$ is cash and cash equivalents from past periods, Y is a present and past period output (operating revenue/turnover) and Q is a present value of shadow value of capital. Other variable names and abbreviations are the same as before.

Except for the need to test the results of the study by Perotti and Gelfer (2001) for generalizability (as it is the only one significant study on investment behavior of the Russian BGs up to date), there is a clear logic behind our specification of the model in equations 7.4. Investments in the fixed assets in equations 7.4 are derived from a general formula for firm's cash flows from assets. Cash flows from assets equal to operating cash flows less additions to the networking capital for the period less changes in the net capital spending for the period (change in the fixed assets or investment in the model specified in equation 7.4). Operating cash flows equal to income net of taxes plus depreciation. Additions to the networking capital are the difference between networking capital at the end and at the beginning of the period. The networking capital is the difference between current assets and current liabilities. Current assets equal cash and cash equivalents plus accounts receivable plus inventory; current liabilities equal to accounts payable and short-term debt. The term for cash flows in the model specified in Perotti and Gelfer (2001) and in equation 7.4 is calculated as income net of taxes less changes in accounts receivable and inventories plus changes in accounts payable.

Thus, an important element – cash and cash equivalents – is missing from the cash flows term in equation 7.4. Therefore it has to be added to the investment equation together with the term for cash flows. There is no double counting and no redundancy in this specification. The variables Debt and IBT are included in the investment equation based on the prior assumption that investments in fixed assets are usually financed by the long-term debt and the pretax income (some investments in fixed assets are excluded from taxable income in Russia). If profitability of investment is taken into account when investment

decisions are being made then the term IBT has to be included into the investment equation.

Results of estimation of investment equation without shadow value of capital for OBGs, non-OBGs and total sample are presented in the Table 7.2. All assumptions about behavior of an individual component of an error term, made before for estimation of other equations on our panel data (random effects), hold here. To control for the size every variable in the Table 7.2 is scaled by the total assets in the previous period. Output, IBT, CF in 2001 are scaled by K in 2000; and Output, CF, Debt, and Cash in 2000 are scaled by K in 1998. As it was already noted, specification of the equations in Table 7.2 builds on the specification of the investment equation in Perotti and Gelfer (2001).

As estimation results show, profitability measured as a ratio of income before taxes over total assets (IBT) has positive and significant influence on investment for OBGs. If investment decisions are based on the expected outcome measured in terms of future profitability, then this result is what one would expect. This term, however, becomes insignificant in the model for non-OBGs and the total sample.

There is a strong positive influence of changes in output in 2000 for OBGs on their investments. Parameter estimate is around 0.03 with p-value = 0.00 and is the same for other categories: on-OBGs and total sample. 1998 was a year of crisis followed by substantial recovery in many sectors of the economy in Russia. All companies from all sectors of the economy benefited in terms of economic recovery in the years after the crisis.

Change in output in 2001 is found to have negative and significant influence on investment for OBGs, non-OBGs and the total sample but mostly for non-OBGs.

There is also a significant and generally quite strong relationship between internal cash flows and investment. The parameter estimates for 2001 cash flows are around 0.54, 0.56, 0.35 with p -values = 0.00 for OBGs, non-OBGs and total sample respectively. The parameter estimate for 2000 cash flows is 0.13 and 0.10 with p -value = 0.00 for a general sample case and non-OBGs and - 0.18, p -value = 0.00 for OBGs. So, in the case of 2000 internal cash flows for OBGs, parameter estimate on cash flows is negative and significant.

The interaction between OBGs and internal cash flows for 2000 is also found negative and significant (-0.20; p -values = 0.00 for the total sample). Negative sign on internal cash flows from the previous period might suggest either redistribution of cash flows and income in agreement with results from the previous chapter, where redistribution effect of OBGs on profitability was confirmed, or it might also suggest better access to external financing, or both. In the case of OBGs there is certainly better access to external funds as OBGs mostly trade their shares on secondary markets as well as having better access to bank and other loans. (See the results of distribution statistics above. There the magnitude of mean difference in total debt between OBGs and non-OBGs was found to be significant in favor of OBGs.)

There is a negative influence of debt financing on changes in fixed assets for OBGs. For non-OBGs and total sample parameter estimates are positive but not significant. This suggests that the debt is generally not a source of financing of investments for non-OBGs.

The sign on total debt is negative for OBGs; parameter estimate is significant in the case of main effects of debt influence on investment; interaction effect between OBGs and debt in the model for total sample becomes insignificant. The negative sign on DEBT term might suggest that, while OBGs have better access to external financing, debt is generally not used for financing of investment in fixed assets or that OBGs redistribute debts within their group framework. Redistribution of debt financing makes sense, as smaller or weaker firms in the group or those that are affiliated with OBGs through pyramidal ownership can not have the same level of access to external debt as OBGs.

In terms of parameter estimates of cash and cash equivalents, they are negative and significant for non-OBGs and the total sample but positive and not significant for OBGs. In general there is no evidence of redistribution of cash within OBGs-affiliated companies. And there is evidence that non-oligarchic firms prefer not to use cash for investment in fixed assets. As results of descriptive statistics show, cash to total assets ratio was much higher for non-OBGs than for OBGs in the given period. Non-OBGs prefer to keep more cash for immediate use but they do not use cash or its equivalents as a source of investment in fixed assets. Interaction of cash with OBGs was not significant in the model either (not shown).

The parameter estimate for the dummy for OBGs and the state in the equation for total sample shows positive but insignificant influence of both oligarchic BGs and state companies. The magnitude of the coefficient on the OBGs' dummy is slightly higher. In general there is no evidence to suggest that oligarchic BGs invest more than the state owned companies for a given sample and for a given period of time.

We also estimated an investment equation (7.4) with the squared past investment added as an independent variable and found that its inclusion did not change the results. Other variables used to estimate the equation were categorical variables to control for industry and region effects (both insignificant). Their inclusion did not change general results reported here.

7.5. Conclusion

In summary, results of estimation of investment equation for OBGs, non-OBGs and the total sample, as well as descriptive statistics, show that there is some evidence of redistribution effects of OBGs in terms of internal cash flows and total debt. The parameter estimate on the internal cash flows for 2000 for OBGs is negative while it is positive for the total sample and non-OBGs.

While oligarchic BGs certainly have better access to external financing, such as raising funds on public exchanges and external debt (hypothesis 2.c. partially supported), the negative parameter estimate on internal cash flows also shows redistribution of cash flows within oligarchic BGs-affiliated companies. This result is in agreement with results found in the previous section of redistribution effect of OBGs on ROA. Keeping in mind that

internal cash flows and ROA are correlated by the definition, these results are what one would expect.

There is also evidence of redistribution effect of OBGs in terms of total debt. The parameter estimate on interaction between OBGs and total debt is negative and significant. While there is also no evidence to suggest that debt is a primarily source of investment in fixed assets, the parameter estimate is negative and insignificant. Descriptive statistics shows that OBGs have a higher total debt to total assets ratio than non-OBGs (hypothesis 2.b and 2.c are partially supported).

There is no evidence found on redistribution of cash by OBGs in comparison to others. There is also no evidence that OBGs invest more in fixed assets than non-OBGs or state owned companies. OBGs invested more than non-OBGs by the results of descriptive statistics in 2001 but the difference is not statistically significant on average for three years (hypothesis 2.a is not supported).

As the time period used in this study is for the 1998 to 2001 sample, one has to keep in mind the influence of economic crisis on investment activity of OBGs and non-OBGs. As the results of descriptive statistics show, the values of fixed assets decreased significantly more for OBGs than for non-OBGs in the given period of time. While certainly there were major investment projects undertaken by OBGs and non-oligarchic firms during this period of time, their influence on the total picture with investment in fixed assets is not crucial.

Table 7. 1 Descriptive Statistics and Correlations

Variable	OBGs	Non-OBGs	Total	1 ⁷	2	3	4	5	6
1.Fixed Assets	223	81	121						
01.01.1998,	(1,951)	(1,036)	(1,354)						
St. dev	53	51	52						
01.01.2000	(218)	(100)	(854)						
St. dev	92	89	91						
01.01.2001, \$m	(414)	(1,898)	(1,628)						
St dev									
2.Employment	3,904	1,597	2,237	0.10*					
St.dev.	(10.062)	(3,071)	(6,000)						
3.Cash flow-total	0.11	0.10	0.11	0.00	0.07*				
assets ratio	(0.02)	(0.02)	(0.02)						
4.Investment-total	0.06	0.04	0.05	0.02	-0.01	0.17*			
assets ratio*	(0.02)	(0.02)	(0.02)						
5.Bank debt-total	0.10	0.003	0.03	0.00	-0.03+	-0.11*	0.03		
assets ratio*	(1.82)	(0.02)	(1.03)						
6.Cash-total	0.01	0.04	0.04	-0.01	-0.12*	0.06*	0.08*	-0.02	
assets ratio*	(0.01)	(0.01)	(0.01)						
7.Total debt-total	0.18	0.10	0.12	0.03	0.01	0.00	0.02	0.22*	-0.04+
assets ratio*	(0.02)	(0.01)	(0.01)						
St. errors are in parentheses.									
* - Mean difference and correlations significant at 5% level; +-significant at 10% level									

⁷ Fixed assets average for three years

Table 7. 2 GLS Estimation Results. Investment Equation. Dependent Variable: I_t/K_{t-1} .

Random Effects. Robust St. Errors

Estimate	OBGs	Non-OBGs	Total
Constant	-0.05 (0.08)	0.18* (0.04)	0.12 (0.07)
Output2001/K2000	-0.01* (0.05)	-0.09* (0.00)	-0.04* (0.00)
Output2000/K98	0.03* (0.00)	0.03* (0.00)	0.02* (0.00)
CF2001/K2000	0.54* (0.00)	0.56* (0.00)	0.34* (0.00)
CF 2000/K98	-0.18* (0.00)	0.13* (0.00)	0.10* (0.00)
DEBT2000 /K98	-0.13* (0.00)	0.08 (0.33)	0.03 (0.80)
CASH 2000/K98	0.40 (0.10)	-0.21* (0.00)	-0.18* (0.01)
IBT2001/K2000	0.50* (0.00)	-0.16 (0.08)	-0.07 (0.42)
OBG			0.06 (0.20)
State			0.03 (0.50)
OBG* CF2000 /K98			-0.20* (0.00)
OBG* DEBT2000 /K98			-0.12 (0.60)
Location			-0.0003 (0.17)
Industry			0.007 (0.38)
R ²	0.56	0.38	0.25
N	77	388	465

*-significant at 5% level; P-values in parenthesis

Chapter Eight

Productivity

8.1. Introduction

This section tests the hypotheses with respect to the relationship of oligarchic BGs to productivity. In particular, we are interested in figuring out whether oligarchic BGs are more productive than other companies. As well, we will test the impact of oligarchic BGs productivity on the taxes they generated. This chapter will therefore test the hypothesis 3.a and 3.b developed earlier (Chapter 4 of this study).

With respect to the last factor that we will use to examine the behavior of oligarchic BGs and non-oligarchic firms in Russia, productivity our expectations are based on the following. According to the previously cited work on Ukrainian oligarchs (Gorodnichenko and Grygorenko, 2004), the proposition with respect to the positive influence of oligarchs on productivity was tested empirically and confirmed. Oligarchs appeared to be more productive than otherwise non-affiliated firms. These tests were made on a sample of 2,000 Ukrainian firms. As was mentioned earlier, the difference between Ukrainian and Russian BGs should be only marginal. In any case, it appears that it is plausible to generalize the result. The tests done further in this study will serve the purpose of extending the results of the study on Ukrainian business groups.

Hypothesis 3.a. Holding everything else constant, oligarchic BGs are more productive than non - oligarchic firms.

If the oligarchic BGs are more productive then it is reasonable to suggest that they are also capable of generating more tax revenues than otherwise un-affiliated firms. Gorodnichenko and Grygorenko (2004) also predict that for a sufficiently large increase in productivity an investing oligarch pays more in taxes than non-investing owner if the marginal penalty for looting is elastic (i.e. looting is sensitive to changes in penalty). This proposition was not tested empirically either, nor was the propositions that looting is decreasing in penalty.

In a study on Russian BGs by Desai, Dyck and Zingales (2003), it was found that the increase in penalty does have an impact on the behavior of BGs in Russia and around the world as well. In particular, it was shown that lowering the tax rate that is combined with increased tax law enforcements in the countries with weak corporate governance has a positive impact on the tax revenues generated by the BGs. Lower tax rates combined with enforced tax regulations provide an incentive for managers to decrease the level of taxable income diverted. For a rational economic being the opportunity costs of diversion of taxable income outweigh the benefits from such diversion (i.e. it becomes easier to pay taxes at lower rates under enforced tax laws than make an effort to divert income).

Desai, Dyck and Zingales (2003) also propose testing empirically what they call the "corporate Laffer curve". The idea behind the corporate Laffer curve is the same as that behind the original Laffer curve. Tax revenues generated by corporations are increasing in

the tax rate only to the point of optimum and decreasing otherwise (the first derivative is positive and the second is negative; the curve is bell - shaped). Tax rates are the main important element of corporate Laffer Curve. They test their predictions on a cross- country sample, taking into account modes of corporate governance in every country as well as levels of tax enforcements. Cross-country tests of the corporate Laffer curve gave support to the proposition that, in the countries with weaker corporate governance systems and law enforcements as well as high tax rates, the state budget is getting less in terms of tax revenues generated by corporations than otherwise.

Based on the above discussion with respect to the productivity of oligarchic BGs and impact of taxation, the following prediction can be tested:

Hypothesis 3.b. Oligarchic BGs tend to pay more in taxes than non-oligarchic firms when the tax rates are lower and the tax enforcements are stronger.

The last hypothesis is intended to test a “corporate Laffer curve”, as in Desai, Duck and Zingales (2003), but at the firm level and not on the cross-country level.

8.2. Productivity Overall

8.2.1. Descriptive Statistics

According to the results of descriptive statistics shown in Table 8.1, two main factors of production – labor and capital – are positively and strongly related to the firm’s total output (measured as operating revenue/turnover in thousand \$ US) . The correlation coefficient of

the logarithm of total output (LogOutput in the table) with the logarithm of number of employed (LogLabor in the table) is 0.73 and significant at any level. The correlation coefficient of the logarithm of total output with the logarithm of capital (measured as fixed assets in thousand \$ US. LogCapital in the table) is 0.75 and is also significant. Correlation of the dummy for OBG with LogOutput is 0.28, highly statistically significant; with LogLabor it is 0.24, highly significant and 0.22 with LogCapital, also highly statistically significant. Examination of results in Table 8.1 shows that two variables, LogLabor and LogCapital are highly correlated with each other. This result shows the potential for a multicollinearity problem in future. According to the preliminary results of descriptive statistics and correlations, OBGs played a positive role in relationship to total revenues generated from sales over a three year time period. We will now turn to the results of estimation of different modifications of production function that are presented in the next section.

8.2.2. Estimation Results. Production Function

To test how productive oligarchic BGs are in comparison to others (hypothesis 3.a.), we estimate a general Cobb – Douglas production function in the following form:

$$\text{Log} (\text{Output}_{ijt}) = \beta_0 + \beta_1 \text{OBG} + \beta_2 \text{Log}(\text{Capital}_{jt}) + \beta_3 \text{Log}(\text{Labour}_{jt}) + \varepsilon_{jt} \quad (8.1.a)$$

$$\begin{aligned} \text{Log} (\text{Output}_{ijt} / \text{Output}_{j(t-k)}) &= \beta_0 + \beta_1 \text{OBG} + \beta_2 \text{Log}(\text{Capital}_{jt} / \text{Capital}_{j(t-k)}) \\ &+ \beta_3 \text{Log}(\text{Labour}_{jt} / \text{Labour}_{j(t-k)}) + \varepsilon_{jt} \end{aligned} \quad (8.1.b)$$

$$\text{OBG} = \beta_0 + \beta_1 \text{Log} (\text{Output}_{ijt}) + \beta_2 \text{Log}(\text{Capital}_{jt}) + \beta_3 \text{Log}(\text{Labour}_{jt}) + \varepsilon_{jt} \quad (8.1.c)$$

where *Output* is defined as operating revenue/turnover in thousand \$US; *Capital* is defined as fixed assets in thousand \$ US; *Labor* is a number of employed; other variable and index abbreviations are the same as before.

The notion of the production function has been around for a long time starting with the famous “Principles of Economics” text by Marshall (1890). For empirical analysis specification of production function as in equation 8.1.a. was first time used in the article by Cobb and Douglas (1928) that purported to test empirically the theory of marginal productivity (Berndt, 1996). Therefore the model in equation 8.1.a. is purported to test production function in its classical form.

Over the number of decades academicians have developed many modifications of the classical form of production function. For example, in the study of Ukrainian oligarchs that is of an interest, Gorodnichenko and Grygorenko (2004) measure the effect of oligarchs on firm productivity by estimating the Cobb-Douglas production function in growth rates as in equation 8.1.b. They call the left term in the model specified in 8.1.b. a “value added”. They find that the effect of oligarchs on productivity was insignificant when a dummy for oligarchs was included in the production function directly. Only when they instrument the variable for oligarchs in the way shown in equation 8.1.c., did the effect of oligarchs affiliation on productivity becomes positive and significant. Given this, we decided to estimate production function in its classical form; in the form of “value added”; and in the form where OBG variable is instrumented by other variables.

Equation 8.1.a was used to estimate the general production function with two factors – labor and capital- controlling for the influence of OBG over a three year time period. In this case assumptions made previously about behavior of the error term in the model and its structure hold (i.e. assumptions about random effects. See Chapter 6 for details).

Equation 8.1.b estimates the general production function in terms of changes of the two factors of production and total output over time. This equation was estimated three times: for the 2001 – 2000; 2000 - 1998 time periods, for the 2000 -1998 time period and for the 2001 - 1998 time period. Since this equation is estimated in differences of variables in the model, time invariant characteristics such as firm specific effects are lost.

Equation 8.1.c., where OBG is the dependent variable and output, labor and capital are repressors, helps to control for a possible endogeneity problem. This equation was estimated by logit. All previously made assumptions about error component in the regression hold. We also estimated all equations controlling for industry and region effects (not shown) and found that their inclusion does not change the results.

Table 8.2 shows the results of estimation of equations 8.1.a – c. The column 3 where output is the dependent variable shows estimation of equation 8.1.a. According to the estimation results, the influence of OBGs on total revenues after controlling for the influence of labor and capital was positive and significant for the total three-year period. Influence of labor and capital is positive and significant too. Goodness of fit of this model is high as well, $R^2 = 0.63$.

Interestingly, in equation 8.1 labor plays a positive and statistically significant role. In the case of estimation of models in previous sections the influence of labor was found positive but insignificant (e.g. profitability and investment models). A multicollinearity problem might be a reason for this result (when labor is significant in one case and is not significant in another), as well as the difference in the models' specifications and variables' specifications. As a number of econometricians have argued that this (or similar) result is what has to be expected when estimation of production function is performed on the panel data. For example, Ghirliches and Mairesse (1998) suggest that in empirical practice, the application of panel methods to micro-data can produce low and sometimes insignificant capital coefficients and low estimates of returns to scale.

Columns 4, 5 and 6 show the results of estimation of equation 8.1.b. for three different time periods: 2001 – 2000, 2000 – 1998; 2000 – 1998 and 2001 – 1998. According to these results, the influence of two factors of production – labor and capital – is positive and significant for all periods. Influence of dummy for OBG is insignificant. It is negative for two time periods, 2001 to 2000, 2000 to 1998; and 2001 to 1998, but is not significant at any reasonable level. Dummy for OBG is positive in just one case: the time period 2000 to 1998, but it is not significant. According to these results, the influence of OBG appears to be insignificant when the general production function is estimated in differences, as in equation 8.1.b., and not in levels as in equation 8.1.a. Only in the case of model with changes in output for the time period 2000 to 1998 as a dependent variable, the dummy for OBG had a positive sign.

We then estimated equation 8.1.b controlling for a possible endogeneity problem. We first estimated equation 8.1.c. with OBG as the dependent variable using logit regression and then used 2SLS IV estimation technique to estimate equation 8.1.b. Results of 2SLS IV estimation of this equation are presented in columns 1 and 2.

Column 1 shows the results of the logit regression of the OBG dummy on the logarithms of output, labor and capital. All independent variables contribute positively to the probability of being an OBG but only in the case of Log (Output) is this influence found to be significant. A collinearity problem might be the reason as the correlation between output, labor and capital is very high (See Table 8.1). However, the Pseudo R^2 for the logit regression with OBG as a dependent variable shows significant decrease in model fit (0.07 in comparison to the model fit in equation 8.1.a. column 3, $R^2 = 0.63$). In this equation 8.1.a OBG is an independent variable. The model fit is 0.06 is the model in column 4 and 0.16 and 0.20 in the models in columns 5 and 6. Models shown in columns 4-6 are estimated using equation 8.1.b.

This result might suggest that endogeneity problem might exist. However, OBGs, labor and capital as independent variables appear to explain more in terms of changes in total output, than output, labor and capital in terms of probability of being an OBG. Most likely the direction of effect is from OBGs to total revenues rather than the other way around. An endogeneity problem might exist in terms of one factor – firm assets – and that is what the result of logit estimation shows. As well, the multicollinearity problem might be a case for

concern. In any case, we used the IV estimation results of OBG predicted by logit and the three main independent variables.

Column 2 shows the results of IV estimation of equation 8.2.b for one time period 2000 to 1998. In this equation the influence of affiliation with OBGs on the change in productivity becomes higher in magnitude than in the case of non-instrumented estimation (column 5) and significant at a 5 % level: parameter estimate 0.08 and 0.01, p-value 0.50 for IV and GLS estimation respectively. We also did IV estimation of equation 8.2.b. for 2001 to 2000 and 2001 to 1998 time periods. The parameter estimates for OBG influence on changes in productivity were positive but insignificant (not shown). Model fit in the model shown in column 2 is comparable with model fit of the model shown in column 5. The Hausman test rejects equality of IV and GLS estimates for the model shown in column 2.

Results presented in this and previous sections suggest that there is evidence of a positive influence of OBGs on productivity (output) when the production function is estimated in levels and not differences. It is positive and significant over a three years period. There is also a positive influence of affiliation with OBGs on changes in productivity but only for the 1998-2000 time period. Results presented in this section provide some support for the idea expressed previously in the literature that oligarchs might show positive results on the dimension of productivity under certain conditions (e.g. Gorodnichenko and Grygorenko, 2004).

We also have to keep in mind that in the given period of time Russia went through a period of economic crisis and recovery, as well as some policy changes. Most of them are related to changes in fiscal policy and specifically a change in taxation rates and enforcement of tax regulation in 2000. The next section presents an examination of relationships between affiliation with OBGs, productivity and changes in fiscal tax policy. In particular, it looks at the influence of tax enforcement regulations and changes in taxation rates on the amount of tax revenues collected by the state from OBGs, non-OBGs and for the total sample. In the case where productivity of firms affiliated with OBGs is high, we test the hypotheses that tightening tax regulations and lowering overall tax burden makes OBGs generate more tax revenues.

8.3. Taxation and Productivity

8.3.1. Descriptive Statistics

Table 8.3 shows descriptive statistics of variables used for the estimation of equations that link together oligarchic BGs, productivity and taxation. "Taxrate" is defined as the ratio of total taxes paid (in thousand \$US) over output (where output is operating revenue/turnover in thousand of \$ US). The overall taxes to output ratio is higher for OBGs than for non-OBGs but it is also more volatile and the mean difference between OBGs and non-OBGs is not significant.

" Δ Taxes to output ratio" is defined as taxes to output ratio for the current period less taxes to output ratio for the previous period. Change in the taxes to output ratio is negative for the three years overall and with respect to each year for OBGs, non-OBGs and the total sample. This change is more volatile for OBGs and the mean difference for OBGs and non-

OBGs is insignificant for three years overall and for each year respectively. However, the highest change in the taxes to output ratio occurs in the year 2000 for OBGs (-0.18).

Taxation in thousands of U.S. dollars is higher for OBGs than for non-OBGs overall and the mean difference is significant. It is also higher with respect to each of three years but only in the case of 2000 is the mean difference between OBGs and non-OBGs found to be significant ($t = -1.91$, $p\text{-value} = 0.06$). General tendency in terms of taxes paid by both groups is an increase for the year 2000 in comparison to 1998 and a decrease in taxes paid in 2001 in comparison to 2000. However, for OBGs the increase in taxes paid in 2000 is the highest.

The taxes to output ratio shows the tax burden in terms of percentage of taxes paid to total output. In the case of our sample, the overall change in the taxes to output ratio is negative. The highest positive change in taxes paid occurred in 2000 and especially for OBGs. At the same time, in 2000 there was the highest negative change in the taxes to output ratios.

Estimation results of the equations that link together oligarchic BGs, taxation and productivity are presented in the next section.

8.3.2. Estimation Results: Corporate Laffer Curve

To test how tax enforcement actions influenced behavior of OBGs in comparison to others we estimate the following version of the corporate Laffer curve.

$$\begin{aligned}
\text{Log}(\text{Taxes}_{jt}/\text{Taxes}_{j(t-k)}) &= \beta_0 + \beta_1 \text{OBG} + \beta_2 \text{Log}(\text{Taxrate}_{jt}/\text{Taxrate}_{j(t-k)}) \\
&\quad + \beta_3 \text{OBG} * \text{Log}(\text{Taxrate}_{jt}/\text{Taxrate}_{j(t-k)}) + \beta_4 \text{Log}(\text{Output}_{jt}/\text{Output}_{j(t-k)}) \\
&\quad + \beta_5 \text{OBG} * \text{Log}(\text{Output}_{jt}/\text{Output}_{j(t-k)}) + \varepsilon_{jt}
\end{aligned}
\tag{8.2}$$

where *Taxrate* is a ratio of taxes paid to pretax profit, *Output* is operating revenue/turnover, index abbreviations are the same as before.

The Laffer curve maps a function of state tax revenues and tax rates in a two-dimensional space. Its primary purpose is to show that there exists an optimal tax rate that maximizes state tax revenues. Tax rates are an essential element of the Laffer curve. When other variables (e.g. output) are added to the model the function can be mapped in a more than two-dimensional space. Laffer curve is increasing in the tax rate to the point of optimum and decreasing otherwise. The Laffer curve is increasing in output. Desai *et al.* (2003) estimate the Laffer curve model under the assumption that the tax rates are constant with respect to each country. This assumption is plausible, since their model is estimated on the aggregate level.

On a firm level the tax rates might vary, since in one country there are different industries and different companies within each industry (e.g. in Russia overall taxation rates in oil and gas industry differ from taxation rates in the education sector and/or from taxation rates in the production of machinery sector). Differences in taxation rates with respect to industry can be found in almost every country. Moreover, there are numerous firm level tax

exemptions). In our specification a ratio of taxes paid to pretax profit serves as a proxy for an “actual” tax rate on a firm level.

Results of estimation of equation 8.2 are presented in Table 8.4. Note that since the equation in 8.2 is estimated in differences, any time invariant characteristics such as firm specific effects are lost. Equation 8.2 was estimated three times. Once to account for changes in taxes paid in the period from 1998 to 2000, then from 1998 to 2000 and 2000 to 2001, and the last time for the period from 1998 to 2001.

According to the estimation results, influence of changes in output on changes in taxes paid is significant for all three time periods. The coefficients are positive and high in magnitude. This is what one would expect, as it is consistent with predictions of the theory in terms of corporate version of Laffer curve: taxes are increasing in output.

The influence of changes in tax rates on the amount of taxes paid is positive and significant for all three time periods. Parameter estimates are 0.62, 0.58 and 0.62 p-values are 0.00 for 1998 to 2000, 2000 to 2001, 2000 to 1998 and 1998 to 2001 time periods respectively. Parameter estimate for 2000 to 2001 is 0.70, p-values is 0.00 (not shown). Since taxes paid to output ratios shown in Table 8.3 are generally not very high overall for three years, we would expect a positive sign on the changes to tax rates in the regression. Lowering tax rates in the cases of over-taxation (taxation far above optimal taxation rate) would lead to increase in tax revenues, according to the Laffer curve model. To account for this we included the squared term of changes in tax rates into the regression (not shown). The

results show that the squared term of tax rates is negative and weakly significant. Since the Laffer curve is increasing in tax rates below the optimal tax rate, the first derivative of tax revenues with respect to tax rate is positive the second one is negative. Our results show that a 10% increase in corporate profit tax rates would lead to an increase in tax revenues by only 6% on average for three time periods. This result is consistent with predictions of the Laffer curve model.

The influence of OBGs on the changes in taxes paid for a given period of time is positive for the 1998-2000 and 1998-2001 time periods, but only in the case of 1998 to 2000 it is found to be positive and significant. The parameter estimates for the OBG dummy are - 0.07 and 0.13, p-values = 0.40 and 0.44 for 2001-2000, 1998-2000 and 2001 – 1998 samples respectively (estimate for 2001-2000 is negative. Not shown). Parameter estimate for the 2000-1998 sample is 0.37, p-value is 0.00. Thus, for changes in taxes paid for the period from 1998 to 2000 the influence of oligarchic BGs becomes significant and high in magnitude. This is the only time period where the influence of OBGs on taxes paid was significantly positive.

These results are not surprising, as they are consistent with the results of the descriptive statistics reported for total taxes paid in 2000 by OBGs, non-OBGs and the total sample. Overall change in taxes paid for the year 2000 was positive for all groups, however, for OBGs it was much higher and the mean difference between OBGs and non-OBGs was found to be significant as well. This is the only year (2000) when the mean difference in taxation between OBGs, non-OBGs and the total sample was found to be significant. Since

we lack the data for the year 1999, it is impossible to estimate the influence of OBGs on changes in taxes paid from 1998 to 1999 and from 1999 to 2000. However, it is reasonable to conclude that most of the positive changes in taxes paid by OBGs can be attributed to the year 2000.

The positive influence of OBGs on the amount of taxes paid in the year 2000 found in this study supports the evidence found previously in some studies on the influence of tax enforcement actions on the behavior of business groups all around the world and in particular in Russia. For example Desai, Dyck and Zingales (2003) found that the election of Putin represented a turning point in the level of tax enforcement in terms of its influence on one of the Russian OBG companies – Sibneft - and for the oil and gas industry in general. In particular, they found a pronounced effect of tax enforcement actions on the behavior of stocks of oil and gas companies and of Sibneft in the period from June 2000 to January 2001. Stronger tax enforcements reduced the amount of income the manager diverted, thus making a positive influence on stock prices. Expectations about lower personal income tax rate (flat tax rate of 13%) and lower social funds tax rates might also influence the incentive not to divert significant amounts from corporate taxes in 2000.

Evidence found in this study is consistent with the results reported by Desai, Dyck and Zingales (2003), not only in terms of the timing of tax enforcements in Russia and changes in behavior of the major Russian companies. It is also consistent with the results of their estimation of the corporate Laffer curve. Although they estimated what they call a “corporate version of Laffer curve” on a panel sample consisting of different countries and

not on a sample of the Russian companies, as is done in our study. Cross-country comparisons of corporate Laffer curve supported their conclusion on Russian companies, their stock prices and enforcement actions taken in Russia in 2000. In particular, they found that corporate governance systems (their effectiveness) affect the level and sensitivity of tax revenues to tax changes. Corporate tax rate increases have a negative influence on changes in tax revenue in the case of countries with weaker corporate governance standards. In terms of the interaction effect of OBG and changes of tax rates our results show that this effect is negative and insignificant in all cases. However, the sign of the interaction effect might suggest that OBGs are sensitive to tax rates decreases. Interaction of OBGs with squared tax rate is also negative (not shown). Interestingly, that interaction effect of OBGs and changes in tax rates is not significant in all cases; however p-values are much less for the time period where the dummy for OBGs is significant (2000 to 1998 time period). For two other time periods it is also negative but not significant.

In terms of the interaction effect of OBGs and changes in output, our results show that this effect is positive and significant for the time period 1998 – 2001, 2000 - 2001. The parameter estimate is 0.22, p-value is 0.00. The interaction effect of OBGs and changes in output for two other time periods is not significant. Interaction looks insignificant in the model possibly due to multicollinearity problem⁸. The correlation between interaction of OBGs with changes in output is positive and significant: 0.13 for 1998 to 2001 period and 0.21 for 1998 to 2000 period. The interaction effect of OBGs and changes in output shows a direct link between OBGs, productivity and taxes. It shows that for a sufficiently large

⁸ Variance inflation factor is the highest for the interaction of OBG with output for these time periods: 2.66 for 2000 to 2001 and 2.25 for 1998 to 2000.

increase in productivity, influence of OBGs on changes in taxes paid can be positive, significant and high in magnitude.

8.4. Conclusion

According to the results of hypotheses testing presented in this sections with respect to the influence of OBG on productivity and taxation, partial support was found for hypothesis 3.a. Hypothesis 3.b. was supported by the results of the tests using the available sample for the given period of time. Specifically, the influence of affiliation with OBG on a firm's productivity was found to be positive when the production function is estimated in levels but not differences. It is positive and significant over a three year period. And there is a positive and significant influence of instrumented OBG on changes in productivity for the 1998 to 2000 time period.

With respect to hypothesis 3.b, it was found that the influence of affiliation with OBG on the amount of taxes paid is positive and significant only for the time period when tax enforcement was stronger (the year 2000). This result is consistent with the results reported by Desai, Dyck and Zingales (2003) for some of the Russian BGs for the same time period (the year 2000). OBGs do pay more in taxes when the tax rate is not very high and the penalty is enforced. This result also shows support to the proposition developed in the study regarding Ukrainian oligarchs (Gorodnichenko, Grygorenko, 2004) that was not, however, tested empirically. The interaction of OBGs with changes in output was found to have a positive influence on the amount of taxes paid to the state budget for 1998 – 2000, 2000 - 2001 time periods. This means that for a sufficient increase in productivity, OBGs are capable of generating more tax revenues for the state budget than other companies.

Estimation results of the corporate Laffer curve on the firms level has shown support for hypothesis 3.b. as well. For example, it was found that the general influence of the corporate tax rate on the amount of taxes paid is positive and significant. However, the marginal “returns” on an increase in corporate tax rates are diminishing. For example increasing the tax rate by 10% on average would lead to increase in tax revenues by only 6%. At the same time the interaction of affiliation with OBG and the tax rate was found to be negative. This means that OBGs are generally sensitive to the increase in tax rates and that increasing tax rates on OBGs might lead to reduction in the tax revenues generated by them. It is not possible to comment on this result further, as the interaction (even though had negative sign) was not significant.

Results found in this chapter show general support for predictions developed earlier in this study: OBGs are capable of showing high results in terms of productivity and taxes paid to the state budget. However, the taxation rates have to be either on the optimal levels or a little lower and the tax regulations have to be enforced. Increasing tax rates on the OBGs above the existing rates generally seems to be counterproductive and is capable of generating dead-weight loss to the society in terms of unpaid taxes. These taxes could be otherwise collected, if the tax rates were lower and the tax enforcements stronger. The situation in Russia in the middle to the end of 1990s was close to the situation just described. The state budget did not get sufficient tax revenues because of generally high and non-justifiable taxation rates, very complicated and confusing tax regulations and quite strong tax enforcements in some case and absence of such in other cases. It is not surprising

that the taxation system in Russia at that period of time was regarded as “not just” by many observers and economic participants including some OBGs (see Desai *et al.*, 2003 for more information on this topic).

Table 8. 1 Descriptive Statistics and Correlations

Variable	Mean	St. Dev.	1	2	3
1. OBG	0.28	0.45			
2. LogOutput	8.86	1.69	0.28*		
3. LogLabor	6.77	1.21	0.24*	0.73*	
4. LogCapital	8.10	2.07	0.22*	0.75*	0.76*
* - significant at 5% level					

Table 8. 2 Estimation Results. Production Function. Dependent Variables: Log(Output); OBG

Estimate	First Stage		Second Stage	GLS Estimation Results			
	LOGIT		IV Estimates	Random Effects			
	OBG	$\Delta\text{Log}(\text{Output})$		$\text{Log}(\text{Output})$	$\Delta\text{Log}(\text{Output})$		
	00-98	00-98		01-00, 00-98	00-98	01-98	
	(1)	(2)		(3)	(4)	(5)	(6)
Log(Capital)	0.002 (0.90)			0.35* (0.00)			
Log(Labor)	0.08 (0.27)			0.53* (0.00)			
Log(Output)	0.33* (0.00)						
$\Delta\text{Log}(\text{Capital})$		0.33* (0.00)		0.12* (0.00)	0.32* (0.00)	0.30* (0.00)	
$\Delta\text{Log}(\text{Labor})$		0.38* (0.00)		0.42* (0.00)	0.38* (0.00)	0.44* (0.00)	
OBG		0.08* (0.05)		0.36* (0.00)	-0.01 (0.90)	0.01 (0.50)	-0.04 (0.70)
Intercept	-4.40* (0.00)	0.83* (0.00)		2.29* (0.00)	0.43* (0.00)	0.75* (0.00)	0.85* (0.00)
Pseudo R ² / R ²	0.07	0.17		0.63	0.06	0.16	0.20
N	1954	977		2931	1954	977	977
Hausman test: p-value		0.03					
*-significant at 5% level							
P-values In parenthesis							

Table 8. 3 Descriptive Statistics and Correlations. Taxation

Variable	OBG	Non-OBG	Total	Variable	1	2	3
<hr/>							
Taxes to output ratio	0.10 (1.31)	0.05 (0.11)	0.06 (0.70)	1.LogTax			
Overall average for 3 years							
<hr/>							
ΔTaxes to output ratio 2001-1998	-0.19 (2.27)	-0.05 (0.01)	-0.08 (1.20)	2.OBG	0.22*		
<hr/>							
Taxation,* thousand USD	7,520 (56,885)	2,872 (46,567)	4,161 (49,678)	3.LogOutput	0.76*	0.28*	
Overall average for 3 years							
<hr/>							
Taxation, thousand USD 1998	4,374 (26,811)	2,923 (37,466)	3,325 (34,832)	4.LogTaxRate	0.23*	-0.03	-0.08
<hr/>							
Taxation* thousand USD 2000	13, 268 (89,050)	2,520 (42,718)	5,506 (59,457)				
<hr/>							
Taxation thousand USD 2001	4,900 (32,137)	3,173 (57,296)	3,653 (51,552)				
<hr/>							
*-mean difference is significant at 5% level. St. dev. in parentheses.							
<hr/>							

Table 8. 4 Corporate Laffer Curve. GLS Estimation Results. Dependent Variable: $\Delta \text{Log}(\text{Taxes})$

Random Effects. Robust Standard Errors.

Estimate	01 – 00,00 -98	01 - 98	00 - 98
Constant	-0.23* (0.00)	-0.36* (0.00)	-0.21* (0.00)
OBG	-0.07 (0.37)	0.13 (0.44)	0.37* (0.00)
$\Delta \text{Log}(\text{Output})$	0.93* (0.00)	0.96* (0.00)	1.06* (0.00)
$\Delta \text{Log}(\text{Taxrate})$	0.63* (0.00)	0.58* (0.00)	0.63* (0.00)
$\text{OBG} * \Delta \text{Log}(\text{Taxrate})$	-0.04 (0.46)	-0.06 (0.45)	-0.09 (0.17)
$\text{OBG} * \Delta \text{Log}(\text{Output})$	0.22* (0.05)	-0.07 (0.50)	-0.11 (0.73)
R^2	0.47	0.42	0.50
N	1410	657	673

Chapter Nine

Conclusion

This study has the important goal of improving of our understanding of the role of business groups in the Russian economy. Russia provides a unique opportunity for examining the effects of business group affiliation on firm performance. Because of the nature of the Russian economy, the results are relevant to both mature markets and developing economies.

The oligopolistic structure of industry in Russia makes the formation of business groups very easy and natural, as the industries are usually dominated by a few big companies, thereby making it easy for them to form some alliances and to engage in other forms of collusive behavior.

The segmented nature of information flows presents a general problem with respect to the performance of transactions on the market. To decrease the effect of market failure in the transitional economy, business units might come together to form a business group, thereby saving costs related to information asymmetry and lack of proper information. Thus, business group formation in Russia is also related to market inefficiencies and transaction costs in transition markets.

In addition, undeveloped external capital markets create stronger links between investment decisions and internal sources of funds. In this case the internal capital market within a

business group and group relationships with banks are the natural responses to the limited ability to raise funds through external sources, particularly stock exchanges.

Finally, weak law enforcement makes it difficult to enforce various types of contracts while performing business activities. In the case of a business group where different business units come together under common ownership, the enforcement of contracts is enhanced through internal mechanisms and associated costs are correspondingly reduced.

All of the factors listed above are important characteristics of the Russian economy and culture that create conditions favorable for business group formation. As discussed in the study, the formation of business groups in Russia is therefore a natural outgrowth of the economic, legal and cultural conditions prevalent in that country.

Business groups are therefore seen to play a very important role in Russia which is not dissimilar from business groups around the world, in both developing economies and developed countries. However, Russia also has special characteristics that make the formation of business groups a natural process. As was outlined above, factors that are important for the existence of business groups are reliance on social ties for contracting, undeveloped financial markets, the oligopolistic structure of industry, and segmented information flows. These circumstances provide an opportunity for the testing of effects of business groups in the Russian environment. It is important to recognize that it has only been a little more than a decade since private business groups first appeared in Russia, and little is known about their nature and performance. It is also important to recognize that

Russia is a not developing economy but neither is it a mature market. Therefore effects that are specific to both mature and developing markets can be tested in the setting of Russian business groups.

Accordingly, this study was undertaken to test the effects of business groups affiliation in Russia using a unique data set consisting of around 1, 000 companies within using data from three years (1998, 2000 and 2001). For the purposes of this study the firms that operate in Russia were divided into two main subgroups: oligarchic business groups (OBGs) and non-oligarchic firms (non-OBGs). The classification and definition of OBGs was based in part on definitions of BGs in Russia used in previous studies, but also relied on more general theories of BGs based on economic theory and sociology.

Categorization of firms operating in Russia into two main subgroups has the advantage of being easily operationalized. A contribution of this study is that the classification scheme of firms was tested formally for reliability using methods similar to those commonly used when evaluating construct validity. The results indicate that the characteristics of firms classified as OBGs are in accord with *a priori* expectations based on the economics and sociology literature. In particular, it is found that OBGs are privately held, with highly concentrated ownership in the hands of a small number of individuals.

At the same time, it was found that OBG characteristics that were not examined explicitly, such as pyramidal and family ownership, likely manifested their presence in the structural

model employed in the form of an unobserved latent variable for OBGs. This latent variable had a positive and significant relationship with the observed measure of OBGs.

The nature and performance of business groups in Russia is important, given the changes that are taking place in some countries of the former Soviet Union. After decades of controversial privatization the process of returning some assets belonging to some BGs has taken place (e.g. Russia and Ukraine). Therefore it is important to test for various effects of privately owned business groups. Thus, the categorization of firms in Russia presented in this study permitted the testing of effects of group affiliation on performance (profitability, productivity and investment) using a broad range of performance measures within different time periods.

To test the relationship between OBG firm affiliation and a firm's financial performance, we used ROA as a general measure of a firm profitability. ROA is calculated as income net of taxes divided by total assets. Although there are certainly different ways to measure a firms' financial performance ROA was chosen because it is the most widely used measure and facilitates comparison with previous studies that have also used it (e.g. Caves and Uekusa, 1976; Nakatani, 1984; Khanna and Palepu, 2000; Gedajlovic and Shapiro, 2002; Lincoln and Gerlach, 2004).

Most studies of the effects of group affiliation in developing countries have shown a positive relationship between a group's affiliation and profitability (Khanna and Palepu, 2000; Khanna and Rivkin, 2001). Among the main reasons for group affiliation being

generally profitable in emerging markets are market failures caused by information and agency problems. In contrast, studies in the academic literature on a business group's affiliation in the developed countries have shown that diversified firms generally underperform undiversified counterparts. The reasons are inefficient allocation of capital, and poor internal governance (e.g. Montgomery, 1994; Shin and Stulz, 1998).

In this context we predicted that the influence of affiliation with OBGs in Russia on firms profitability should be more profitable than not, as the Russian market is still in the process of its development. Information asymmetry, agency problems, and general market inefficiency are common. At the same time the level of economic development of the modern Russia inherited from the Soviet Union era, as well as external shocks caused by the transition from a planned to a market economy, might play significant roles as well. For example, a general profit maximization goal might not be the best strategic decision for economic agents under these circumstances. In the long run the goal of profit maximization might be achieved if the distractive influences of external shocks of a transitional period are avoided or minimized, so that the general structure of an economic unit is preserved in order to perform its goals in future.

Based on the above discussion it was hypothesized that OBG affiliation should have a positive, but possibly weak, effect on profitability in Russia, and that OBGs in Russia may act so as to redistribute profits to weaker members of the group in a manner similar to that observed in Japan. In Chapter 6, these hypotheses were tested using a framework developed by Gedgajlovic and Shapiro (2002) and Lincoln and Gerlach (2004). We also

tested for the endogeneity relationship between a firm's profitability and OBG affiliation. As was noted in previous studies (Chang, 2003; Black, Jang and Kim, 2004), the relationship between profitability and business groups affiliation is not clear, since business groups may form in response to high profitability, and not cause it.

Our results were generally supportive of the redistribution hypothesis suggesting that the main goal of OBGs is redistribution of profits among affiliated firms, and less supportive of the hypothesis that affiliation with OBG has a positive influence on the member firms' profitability. The affiliation with OBGs does have positive influence on firm profitability but it is not found to be significant in all cases. Together the results suggest that Russian OBGs do not see short-run profit maximization as their goal for each enterprise, but rather consider the goals of the group as a whole. Thus, weaker firms benefit from profit redistribution practices within the OBG in a way similar to that documented in the case of business group affiliated companies in Japan (Gedajlovic and Shapiro, 2002; Lincoln and Gerlach, 2004). We note, however, that the results with respect to profitability do depend on the time period examined, and this should warrant further study.

Results of 2SLS IV estimation where we controlled for a possible endogeneity problem are supportive of the general GLS estimation results discussed above. Even when model variables were substituted with instruments, no consistent relationship between OBG affiliation and profitability was found. However, the interactive term between OBG affiliation and ROA is (which tests for redistribution) was negative in all cases. Based on

these results we suggest that there is little evidence of reverse causality between affiliation with OBGs and firms' profitability.

The result that redistribution characterizes Russian OBGs is consistent with the idea that financial market failures motivate the formation and behavior of business groups. It is also supportive of the study by Perotti and Gelfer (2001) on Russian business groups where extensive financial relocation was also found. They conclude that it was either due to transfer of funds to firms with better investment opportunities or opportunistic values transfer. While some weaker firms might have better investment opportunities at some point, this is not necessarily true for all firms and all situations. The pattern of profit redistribution found in this study allows us to suggest that OBGs might have reasons for transferring funds other than better investment opportunities.

In this study we also examine directly the Perotti and Gelfer, (2001) suggestion that hierarchical business groups allocate capital comparatively better than other firms. They assess the investment process in fixed assets in hierarchical, horizontal groups and non-group firms by estimating an investment equation with a proxy for Tobin's Q . They define hierarchical business groups as financial-industrial groups where the bank is in firm control, and horizontal business groups as industry groups which are looser alliances without common control structure and non-member groups companies.

While some OBGs in Russia can be defined as financial-industrial groups with hierarchical control structures, others are not. In this study we adopt a definition of OBGs that is

broader than just being a financial-industrial group with a hierarchical control structure. As discussed in Chapters 3 and 5 of this study, OBGs are business groups that are privately held firms with concentrated ownership and using either horizontal or vertical control structures. We therefore used this definition of a business group to reexamine the Perotti-Gelfer study and to determine whether their conclusions could be supported using a different measure for business groups.

Specifically, we tested the primary hypothesis that OBGs tend to invest more in the fixed assets than non-group firms and/or non-oligarchic groups. In addition, we examined the hypotheses that OBGs are less financially constrained and have better access to external financing than do non-OBGs.

In general, we found no strong evidence that OBGs invest more in fixed assets than non-OBGs. A dummy variable for OBGs in the estimated investment equation was not statistically significant. Although it is true that OBGs sometimes invested more than non-OBGs as shown, for example, by mean investment levels in certain years (such as 2001), the difference was not statistically significant on average over a three year period. Thus the hypothesis that OBGs invest more in fixed assets was not supported.

However, the results of the estimation of investment equations, as well as descriptive statistics, showed that there is some evidence of the redistribution effects of OBGs in terms of internal cash flows and total debt. The parameter estimate on the internal cash flows for the year 2000 for OBGs is negative while it is positive for the total sample and non-OBGs.

While oligarchic BGs certainly had better access to external financing through stock markets and external debt, the negative parameter estimate on internal cash flows also shows redistribution of cash flows within oligarchic BGs-affiliated companies. This result is in agreement with results found regarding the redistribution effect of oligarchs on ROA. Keeping in mind that internal cash flows and ROA are correlated by the definition, these results are what one would expect.

There was also evidence of the redistribution effect of oligarchic BGs in terms of total debt. The parameter estimate on the total debt term was negative and significant. At the same time, there was also no evidence to suggest that debt was a primarily source of investment in fixed assets, as the parameter estimate was negative and insignificant. Descriptive statistics showed that OBGs have a higher total debt to total assets ratio relative to non-OBGs.

Thus, we find little evidence that OBGs invested more or less than non-OBGs, other things equal. We did find some evidence to suggest that OBGs were less financially constrained, likely owing to the redistribute and other effects of group membership. It should be noted that the time periods used in this study are for 1998 to 2001, and one has to keep in mind the influence of economic crisis on investment activity of OBGs and non-OBGs. As the results of descriptive statistics showed, the values of fixed assets decreased significantly more for OBGs than for non-OBGs in the given period of time.

Finally, this study examined the relationship between OBGs and productivity. In addition to the question of whether OBGS are more productive than other companies, we examined the impact of oligarchic BGs productivity on taxes generated by them. Thus, two basic hypotheses were tested, the first that OBGs are more productive than non-OBGs, and the second that they pay more taxes, but only when tax rates are lower and tax enforcement is stronger.

With respect to productivity our hypothesis is based on previous work on Ukrainian BGs by Gorodnichenko and Grygorenko (2004), who proposed and tested the proposition that there is a positive influence of oligarchs on productivity. This result, however, was obtained when the production function was estimated in differences and only when the dummy for oligarchs was instrumented with other variables in their model. When the dummy for oligarchs was added to the model directly, its influence on productivity was found to be insignificant. In this respect results found in this study are consistent with the results reported by Gorodnichenko and Grygorenko (2004). Their results tended to confirm the hypothesis: in the Ukraine, oligarchs appeared to be more productive than otherwise non-affiliated firms. Because of the similarities between Russian and the Ukraine, the same hypothesis was tested in this study for the sample of Russian firms.

If the oligarchic BGs are more productive then it is reasonable to suggest that they are also capable of generating more tax revenues than otherwise un-affiliated firms. Gorodnichenko and Grygorenko (2004) suggest that for a sufficiently large increase in productivity an investing oligarch pays more in taxes than a non - investing owner if the marginal penalty

for looting (tax avoidance) is elastic. This proposition was not tested empirically, neither was the propositions that looting is decreasing in the penalty. However, in a related study, Desai, Dyck and Zingales (2003) found that the increase in the penalty does have an impact on the behavior of BGs in Russia. In addition, it was shown that lowering the tax rate, combined with increased tax law enforcements in the countries with weak corporate governance has positive impact on the tax revenues generated by the BGs in a cross section of countries.

Desai, Dyck and Zingales (2003) also tested empirically what they call the "corporate Laffer curve", in which tax revenues generated by corporations are increasing in the tax rate only to a point, and decreases thereafter. Cross-country tests of the corporate Laffer curve gave support to the proposition that, in the countries with weaker corporate governance systems and weaker systems of law enforcement, as well as high tax rates, the corporate tax revenues collected by the state are lower. In this study we used the concept of the "corporate Laffer curve" at the firm level, not the country level, to examine whether any productivity advantage of OBGs resulted in higher taxes paid, and under what circumstances.

The productivity effects of OBGs were tested using a simple Cobb-Douglas production function, at the firm level. The results were found to be mixed. Specifically, the influence of OBG affiliation on a firm's productivity was found to be positive when the production function was estimated in levels, but not differences. When IV estimation was employed to account for endogeneity, there was a positive and significant influence of OBG on changes

in productivity for the 1998-2000 time period. Thus, similar to the profitability analysis, we find no overwhelming evidence that OBGs are more productive, other things equal.

With respect to taxation, it was found that the influence of affiliation with OBGs on the amount of taxes paid was positive and significant only for the time period when the tax enforcement was stronger (the year 2000). This result is consistent with the results reported earlier by Desai, Dyck and Zingales (2003) for some of the Russian BGs for the same time period (the year 2000). OBGs do pay more in taxes when the tax rate is not very high and the penalty is enforced. This result also shows support for the proposition developed in the study by Gorodnichenko, Grygorenko (2004) that was not, however, tested empirically. The interaction of OBGs with changes in output was found to have a positive influence on the amount of taxes paid to the state budget for the 1998-2001 time periods. This means that for a sufficient increase in productivity OBGs are capable of generating more tax revenues for the state budget than other companies.

It was also found that the general influence of the effective corporate tax rate on the amount of taxes paid is positive and significant. However, the marginal 'returns' on increase in corporate tax rates are diminishing. For example, increasing the tax rate by 10% on average would lead to an increase in tax revenues by only 6%. At the same time the interaction of affiliation with OBG and the tax rate was found to be negative, but not statistically significant. This might imply that OBGs are generally sensitive to the increase in tax rates and that increasing tax rates on OBGs might lead to reduction in tax revenues generated by them. Further research on the matter is warranted.

Thus, OBGs are capable of translating higher levels of productivity into higher taxes. However, the taxation rates have to be either at the optimal levels or a little lower and the tax regulations have to be enforced. Increasing tax rates on the OBGs above the existing rates generally seems to be counterproductive and is capable of generating dead - weight loss to the society in terms of unpaid taxes. These taxes could otherwise be collected, if the tax rates were lower and the tax enforcements stronger. The situation in Russia in the middle to the end of 1990s was close to the way it was just described. The state budget did not get sufficient tax revenues because of generally high and un-justifiable taxation rates, very complicated and confusing tax regulations and quite strong tax enforcements in some cases which were absent in other cases. It is not surprising that the taxation system in Russia at that period of time was regarded as 'not just' by many observers and economic actors including some OBGs.

In summary, this study provides a contribution to the existing literature on the role of business groups in the world and in Russia in particular. It suggests a clear and easily operationable definition of oligarchic BGs as well as developing a structural model to test for the validity of a measure developed based on this definition. This study develops and tests a number of predictions with respect to the behavior of oligarchic BGs in Russia related to productivity, profitability, investment and taxation. Oligarchic BGs are found to have a positive but weak influence on profitability as well as seeming to redistribute profits among members of affiliated firms. This result has not been found previously in the

literature examining behavior of business groups in the transitional economies and in Russia in particular.

The influence of oligarchic BGs on investment was positive but insignificant, in contrast to the study of Perotti and Gelfer (2001) on the Russian business groups, where it was found that financial-industrial BGs tend to allocate capital better and to invest more in the fixed assets (especially in comparison to the state-owned firms). The state-owned firms and the oligarchic BGs appear to have the same influence on the level of investment in fixed assets. However, the time frame and the sample used in this study and in the study by Perotti and Gelfer (2001) are different. This study used a sample consisting of around 1,000 companies in Russia, including those that do not have an established secondary market for their shares, within the time frame of 1998, 2000 and 2001. In accordance with the study on Russian BGs of 2001, in our study oligarchic BGs are found to have better access to external financing (such as debt and the public stock exchanges). They also appear to be less financially constrained. There is evidence that oligarchic BGs tend to redistribute debt among their group members as well.

In respect to the productivity of oligarchic BGs it was found that OBGs tend to have positive influence on productivity when the production function is estimated in levels and not in the difference form. However, like the comparable study on Ukrainian business groups (Gorodnichenko and Grygorenko, 2004) a positive productivity effect was found when IV estimation was employed. Oligarchic BGs are also capable of generating more tax revenues in comparison to other companies when the tax rates are lower and the

enforcement of the tax legislation is stronger. A similar prediction with respect to the tax behavior of “productive oligarchs” was also made in the study on the Ukrainian BGs (Gorodnichenko and Grygorenko, 2004) but it was not tested empirically. Estimation of the corporate Laffer curve (similar to Desai, Dyck and Zingales, 2003) on the example of the Russian companies tends to prove this important result for public policy application.

There are a number of limitations in this study. Important limitations include time gaps in the data. This study was performed using balanced panels of around 1000 companies for 1998, 2000 and 2001. Gaps in data included 1999 and 2002. Future research should examine the influence of OBG affiliation on firm performance using broader time frames and possibly larger samples. This study finds redistribution effect of OBGs on profits and debts. More research is needed to examine the underlying reasons and possible consequences of this redistribution. It would be also interesting to examine the influence of OBG affiliation on a wider range of performance indicators and under different model specifications. This study examined effects of OBG affiliation on firm performance controlling for an unobserved endogeneity when firms’ unobserved heterogeneity was not accounted for. Future research should therefore focus on examining the influence of OBGs on performance when unobserved heterogeneity is controlled for. The general approach to OBGs taken here, which views them as rational economic units and an important business phenomenon, should guide further investigations in this area.

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