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***How Does Law Affect Finance?  
An Empirical Examination of Tunneling in an Emerging  
Market***

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# How Does Law Affect Finance?

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# How Does Law Affect Finance?

## An Empirical Examination of Tunneling in an Emerging Market

### **Abstract**

This paper documents that law affects finance in emerging markets through the methods used by controlling shareholders to “tunnel” wealth out of the firm. We find that Bulgarian securities law enabled financial tunneling via dilution and freeze-out tender offers. During the period 1999-2001, about two-thirds of the 1,040 firms on the Bulgarian Stock Exchange were delisted. Freeze-out tender offers for minority shares averaged about 25% of the shares’ intrinsic value. Bulgarian securities law changes in 2002 made financial tunneling more costly for controlling shareholders. Subsequent increases in stock market valuations and liquidity suggest that controlling shareholders have shifted from financial tunneling to less value-destroying methods, such as transfer pricing, to extract wealth from firms.

**Keywords:** Tunneling, freeze-out, controlling shareholders, appraisal rights, preemptive rights

**JEL codes:** G34, K22

## 1. Introduction

La Porta et al. (1998) and Black (2001) argue that the legal environment is a significant factor in explaining capital market development across countries. In economies where securities laws offer investors better protection, stock markets tend to be more liquid and companies finance their projects through public issuance of securities. In contrast, countries with poor legal protections tend to have illiquid markets and concentrated ownership structure. Since the development of securities laws and regulations generally strains to keep pace with mass privatization (Hoff and Stiglitz, 2003), emerging markets often exhibit illiquidity and concentrated ownership.

The research implies that securities law can have a dramatic impact on capital market development in emerging markets, and our paper sets out to study this proposition. While the impact of legal structures on finance in emerging markets has been demonstrated in studies at the macroeconomy level (La Porta et al., 1998, 2002; Demirguc-Kunt and Maksimovic, 1998), there has been little empirical research on the specific mechanisms that link law and finance in emerging markets.

An important means by which law can affect finance, as argued by Johnson et al. (2000), is that inadequate securities laws can enable large shareholders to “tunnel” (expropriate) minority shareholders’ wealth. Johnson et al. (2000) suggest that tunneling can occur via both “financial” and “operational” mechanisms. Financial tunneling involves transactions such as secondary offerings to dilute ownership and subsequent below-market-value “freeze-out” tender offers. Operational tunneling is accomplished through accounting-related activities like transfer pricing, excess compensation, or revaluation of assets. Our paper extends the pioneering study of Johnson et al. (2000) by showing that changes in the law affect the choice of tunneling method, which in turn impacts finance (the capital markets).

Gilson and Gordon (2003) assert that financial tunneling via minority freeze-out is the most value-destroying type of wealth expropriation, as future increases in firm value are not shared with minority owners. Among emerging markets, freeze-outs tend to be more common when there has been a mass privatization “Big Bang,” such as in Czechoslovakia and Russia (Glaeser et al., 2001). Gilson and Gordon (2003) also argue that if laws make financial tunneling more costly or less beneficial, controlling shareholders will rationally shift to operational

methods. So the legal environment not only affects the extent of tunneling, it also influences the method of tunneling.

We use the creation and early years of the Bulgarian stock market to investigate the relationship between law and tunneling. We document the weaknesses in the initial Bulgarian securities laws related to equity value appraisal and preemptive rights. As a result of gaps in the initial laws, most tunneling in Bulgaria prior to the end of 2001 is financial tunneling, accomplished mainly via dilution and minority freeze-outs. Detailed trade, price, and ownership data reveal how freeze-outs actually affect market valuations in this emerging market. During the period 2000-2001, over two-thirds of all companies on the Bulgarian Stock Exchange were delisted, with valuations dropping dramatically and liquidity virtually disappearing.

Financial tunneling is also related to firm-level characteristics. Relative to surviving firms, freeze-out firms tend to be smaller in size and less oriented toward exports, and to have a smaller proportion of ownership by government-backed shareholders. Once a non-government majority shareholder gains control, a freeze-out becomes much more likely. These findings suggest that tunneling in emerging markets is also affected by governance mechanisms like reputation or ownership structure.

Consistent with the goals of self-enforcing corporate law as discussed by Black and Kraakman (1996), legal changes in 2002 filled in the gaps in Bulgarian securities law that had led to mass freeze-outs. We use this natural experiment to examine the assertion of Gilson and Gordon (2003) about shifts between tunneling methods. Consistent with their arguments, financial tunneling via dilution and freeze-out becomes virtually nonexistent after the legal changes. Buyouts of minority shareholders that do occur are at premiums consistent with those in developed markets (DeAngelo et al., 1984), instead of the 70-80% discounts that had existed prior to the legal changes.

After financial tunneling is made more difficult, liquidity in the Bulgarian market improves and valuation levels rise. This is consistent with controlling shareholders rationally switching to operational tunneling methods like transfer pricing with controlled subsidiaries, which are less value-destructive. Operational tunneling, while still costly to minority shareholders, nonetheless permits them to continue to share in the firm's future cash flows. This finding supports the Gilson and Gordon (2003) notion that financial tunneling methods are the most destructive, especially in an emerging market.

The remainder of the paper is structured as follows. Section 2 provides some additional background on the applicable literature, as well as details on the Bulgarian Stock Exchange and Bulgarian securities law. Section 3 describes the data. The results and discussion are in Section 4. Section 5 discusses the change from financial to operational tunneling motivated by the 2002 legal changes. Section 6 summarizes the findings and offers conclusions.

## **2. Background**

### *2.1. Law and finance in emerging markets*

La Porta et al. (1998) examine the relationship between the legal environment and the development of capital markets. Building on their work, subsequent studies have related the level of investor protection across countries to measures of firm valuation, ownership structure, or required dividend payments.<sup>1</sup> In these studies, legal protection tends to be measured as an aggregate index of various protections and rights (La Porta et al. 1998). Countries with stronger protection and shareholder rights tend to have more liquid markets and less ownership concentration.<sup>2</sup>

Far less research has addressed the impact of particular legal statutes and their effect on capital market development in emerging economies. Black (2001) provides a list of legal provisions that should be included in any corporate regulatory environment to facilitate the development of a liquid public equity market. There are also several studies in the law and finance literature that provide case study evidence of how minority shareholder wealth can be expropriated in countries with poor investor protection; notable examples are Johnson et al. (2000) and Black et al. (2000). But these studies do not provide any systematic empirical analysis of the effects of changes in securities law on market development. Nor do they address the impact of the presence or absence of specific legal protections enumerated by Black (2001).

Changes in securities laws should have an impact on the valuation of firm equity, especially if the law tends to lag capital market development (Hoff and Stiglitz, 2003). However, this linkage has not been extensively studied in emerging markets. One exception is Nenova (2002), who examines the impact of changing protections for minority shareholders in

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<sup>1</sup> See Denis and McConnell (2002) for a survey of this extensive literature

<sup>2</sup> See Ciccotello and Muscarella (2001) for similar results for master limited partnerships in the United States.

dual-class share firms in Brazil. She finds that the value of corporate control responds to adjustments in regulations to protect minority shareholder rights.

Dzierzanowski and Tamowicz (2002) argue that minority shareholder rights are the key to market confidence. Protecting minority shareholder against freeze-outs is a particularly important legal protection discussed by Gilson and Gordon (2003) and Black (2001). Johnson et al. (2000) explicitly refer to freeze-outs as “financial tunneling.” Freeze-outs generally take place via dilution of minority ownership, with a subsequent buyout of shares at a low price. Depending on the degree of legal protection, a buyout can generate entirely different outcomes for minority shareholders. In the United States, DeAngelo et al. (1984) document average premiums in going-private transactions of more than 50% *above* share market equity value. In the early stages of the Bulgarian market, minority shareholders were often frozen out at huge discounts (70-80%) to the intrinsic value of their shares.

Managers can also tunnel wealth out of the firm in ways other than by dilution or freeze-out of minority shareholders (Johnson et al., 2000). If financial tunneling methods such as a discounted tender offer would generate large legal or political costs, controlling shareholders might choose to engage in subtler, “operational” forms of wealth transfer. In an ongoing business, operational tunneling is possible through the payment of excessive wages and benefits, or through transfer pricing that favors suppliers or customers in which the majority owner also has an interest (Cheung et al., 2004). Although less dramatic than a tender offer, operational tunneling can transfer significant wealth over time.

The choice between operational and financial tunneling could be influenced by the existing legal regulatory framework. If one tunneling method is made more costly by regulation, controlling shareholders might rationally switch to another method. Even developed markets struggle to find the proper regulatory balance. With the recent accounting scandals in the United States, the regulatory emphasis has shifted toward reducing operational tunneling. This arguably makes financial tunneling (e.g., going private) a more attractive option for controlling shareholders (Pritchard, 2004). Consistent with arguments about switching tunneling regimes, Gilson and Gordon (2003) argue that recent developments in Delaware corporate law encourage financial tunneling through minority freeze-outs. Table 1 summarizes the recent research on tunneling and describes the methods used in Bulgaria.

While data permitting an examination of tunneling in developed markets is generally available, there has been little empirical research on controlling shareholders' choice of tunneling methods in emerging markets. To examine this issue requires firm-level stock ownership, price, and accounting data. Bulgaria provides an interesting opportunity to study the interaction of law, tunneling, and stock market valuation. Not only have the 2002 changes in law against dilution and freeze-out been so dramatic that the shift from financial tunneling methods is discernible, but we also have access to detailed data that allow us to document the implementation of tunneling methods and examine their effect on equity values.

Even if the lack of legal protections for minority shareholders makes freeze-outs possible, the majority shareholders in some firms might choose not to expropriate minority shareholders' wealth. Black (2001) refers to this behavior as motivated by a "concern for reputation." Black and Kraakman (1996) argue that in emerging markets, reputation generally would be less important than corporation law. Rational controlling shareholders or managers balance the benefits and costs of expropriation. When concerns about future business prospects, the success of future public offerings, or political costs make the costs of expropriation high, there is a greater chance that self-governance will complement the explicit control mechanisms contained in the law.

## *2.2. Law and tunneling in the Bulgarian stock market*

### *2.2.1. Laws on freeze-outs*

Prior to 2002, weak preemptive rights (the legal right of existing shareholders to participate in new equity issues in proportion to their ownership stake) in Bulgarian corporate law allowed majority shareholders to increase their capital unilaterally. The lack of preemptive rights is not unusual — LaPorta et al. (1998) find that only 53% of the countries in their worldwide sample have preemptive rights. Bulgarian securities law also allowed a majority shareholder to take a company private by making a tender offer for the shares of the remaining shareholders. The minimum price that the majority shareholder had to pay for the minority shares was the weighted-average stock price for the last three months of trading on the Bulgarian Stock Exchange (BSE).<sup>3</sup>

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<sup>3</sup> Article 150, point 6, of the 1999 Law on Public Offering of Securities.



The combination of these provisions created a roadmap for expropriation. Suppose that a minority stake had already been diluted through additional purchases of shares by majority holders. At that point, the market for minority shares would likely be thin because the shares would face a steep control discount. The majority shareholder could then arrange for several large block transactions with related parties at low prices. The resulting weighted-average stock price (which forms the minimum price for the tender offer) is thus brought down to an arbitrarily low level. As a result of dilution and efforts to drive down the tender offer price, minority shares could be bought back at prices well below their intrinsic value.<sup>4</sup>

Once controlling shareholders had acquired most of the minority shares in a tender offer and obtained the formal approval of the Bulgarian State Security and Exchange Commission, the firm would be delisted from the Bulgarian Stock Exchange. Over the period 1998-2001, nearly two-thirds of the firms on the exchange were delisted.

### *2.2.2. Changes in securities laws*

In the summer of 2001, a newly elected government headed by the former Bulgarian king came into power. One of the priorities outlined by the new government was to improve the functioning of the capital markets. As a first step, in late 2001 the government proposed several changes to the securities laws. Table 2 summarizes these changes, which were authorized by the Bulgarian Parliament in early 2002.

The first of the two main changes was that an increase in firm equity could be implemented only through mandatory issuance of warrants to all shareholders. These warrants had to be listed on the Bulgarian Stock Exchange and publicly traded. As a result of this change, majority owners could no longer unilaterally increase their capital by relying on the lack of participation of minority shareholders in new equity issues. Majority shareholders would have to purchase warrants from the remaining shareholders and thus compensate them for any dilution of ownership rights.

The second major change was the regulation of tender offers in going-private transactions. The law now recognizes three critical ownership levels: 50%, 67%, and 90%. A tender offer is mandatory when a shareholder reaches one of these critical levels, and a

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<sup>4</sup> Relying on a three-month average of market prices would appear to be a reasonable control mechanism. But market failure highlights the weakness in the law. Black and Kraakman (1996) discuss how the weakness of other control mechanisms, such as the market, can impact governance in an emerging market.

controlling shareholder can delist a company only when reaching 90% ownership or greater. The law also gives veto power to minority shareholders regarding the terms of the mandatory tender offer. More than half of all shareholders, besides the majority owner, now have to approve the terms of the tender offer. Finally, minority shareholders are now entitled to receive a fair price for their shares in a tender offer. The fair price is calculated using discounted cash flow and relative valuation methods and is compared to the three-month average stock market price, excluding block trades. The tender offer price should be the higher of the two prices.

These changes echo the spirit of Black and Kraakman's (1996) construction of self-enforcing corporate law in emerging economies. Self-enforcing laws would tend to require direct approval by minority shareholders rather than relying on a market mechanism (appraised values based on average stock prices). The analysis in this paper provides a direct empirical test of the impact of moving from a market mechanism to a self-enforcing legal mechanism for appraisal values.

### **3. Data**

#### *3.1. Sources*

The list of all Bulgarian companies that have ever been publicly traded, the date of their listing on the Bulgarian Stock Exchange (BSE), and the date of their delisting (if any) are obtained from the online database provided by the Bulgarian Securities and Stock Exchange Commission (SSEC). The majority of publicly traded companies on the BSE, a total of 1,040 firms, are companies that participated in the Bulgarian mass privatization process and were listed on the exchange in May 1998. Atanasov (2004) or Miller and Petranov (2000) provide more details about the Bulgarian mass privatization process. Trade and price data are compiled directly from the BSE tapes. Company financials are provided by the SSEC and the Center for Mass Privatization. Tender offer prices are collected from the news tapes recorded by the BSE.

Ownership levels and the number of outstanding shares at year-end for each listed company are provided by the Bulgarian Central Depository, which records all trades in listed securities and keeps all individual accounts of security ownership in Bulgaria. Since no bearer shares exist in Bulgaria, the Central Depository is the ultimate source of ownership data for Bulgarian publicly traded companies.

### *3.2. Descriptive*

Table 3 reports some descriptive statistics for the period from May 1998 to December 2002. The average monthly volume (in Bulgarian levs) decreases during the period 1999-2001, and then sharply increases in 2002 after implementation of the new regulations. The number of issues on the Bulgarian Stock Exchange declines steadily from 1,040 firms in May 1998 to 325 at the end of 2002. The most noticeable drop, however, is between December 1999 and December 2000. The reduction in listed firms is due to widespread freeze-out of minority shareholders.

Our BSE trade data cover all trades on the stock exchange in the period between January 1998 and December 2002. A total of 80,000 trades were executed during that period in the shares of 910 different securities. The market is thin, however, with an average of fewer than 100 trades per security for the whole period.

Table 4 provides evidence on the liquidity of firms on the BSE. Firms in which the government retains a majority stake are the most liquid, as measured by the average number of trades per year. Firms with large non-government owners have only about one-fifth the trades of the government-owned firms, on average. Also apparent is the downward trend in trading. Liquidity is highest in 1998 for four of the five firm ownership types shown. At the beginning of trading in 1998, blocks of shares change hands while large and/or majority ownership stakes are being accumulated. In 2000 and 2001, trading drops off by more than 50% in several types of firms. Even among firms with only small owners, liquidity dries up. Trading rebounds for every type of firm in 2002 after the changes in the securities laws. For firms with a majority owner, trading increases by nearly 50% from 2001 to 2002.

## **4. Results**

This section describes and discusses the stock ownership and market data surrounding the delisting of firms on the BSE. The first subsection presents an analysis of delisted firms and the determinants of delisting. The second subsection examines the process by which ownership is diluted. The last sub-section analyzes the impact of changes in laws and regulations in 2002.

### *4.1. Delisted Firms*

We begin the data analysis by examining a random sample of 100 firms delisted in the year 2000. Our goal is to analyze the terms of delisting deals done before the 2002 changes in securities laws. Table 5 shows that in the sample of 100 delisted firms, the average ownership of the largest shareholder is exactly equal to the minimum stake required to obtain absolute control. In more than half of the sample firms, the largest block is clustered around 50% of firm equity. This suggests that in most of the sample companies, the majority owners did not even bother with secondary offerings to dilute minority shareholders' stake below 50% before launching the freeze-out tender offer.

Table 6 shows a descriptive summary of all delisted firms covered by the SSEC (a total of 840 firms) by ownership classification as of the point when the firm initially traded. Across all categories of ownership, delisted firms are smaller, suggesting that firm size matters. Most of the firms in the sample have one (or more) large owner, government or otherwise. Only 66 out of the 840 have an unclaimed majority block at the end of the privatization auctions and the beginning of trading. In most of these 66, a majority owner eventually emerges through trading on the BSE.

Both Table 5 and Table 6 show that a dispersed ownership structure was unlikely to persist in Bulgaria during the 1998-2001 timeframe. There were strong incentives for large (and majority) shareholders to emerge and buy out the minority at a deep discount. The legal environment permitted concentration of ownership, as well as tender offers at low prices. This is unlike other emerging markets (such as China) that prohibited non-government ownership concentration (Chau et al., 1999).

Table 7 examines the delisting phenomenon in a multivariate context for the 840 firms. Consistent with Table 6, firm size strongly negatively affects the probability of delisting. The percentage of export sales is also negatively associated with the probability of delisting. On the basis of industry classifications used by the Center for Mass Privatization, there is no relationship between industry and the likelihood of delisting.

Table 7 shows that government control after privatization also negatively affects the probability of delisting. This government ownership result parallels the finding in Table 6 that only 43% of the government-controlled firms were delisted, compared to 73% for the sample as a whole. Together, the export sales and government ownership results are consistent with the conjecture that controlling shareholders balance the costs and benefits of financial tunneling

(Black, 2000). Ownership changes in firms with greater exports potentially affect more entities outside Bulgaria, and might generate international attention. Such attention could raise the profile of the freeze-out issue domestically. Similarly, firms under government control could face greater political challenges if they attempt to go private via freeze-out. Perhaps there were considerations in certain cases that offset the potential for rapid profit at the expense of minority shareholders.

The results suggest an interesting tradeoff for minority shareholders in a firm with the government as a controlling shareholder. On one hand, significant government ownership could lead to high agency costs if the government is a poor monitor. This could manifest itself in operational tunneling through suboptimal transfer pricing policies, inadequate performance evaluation, and so on. On the other hand, the government's presence reduces the probability of catastrophic wealth loss for minority shareholders via financial tunneling (freeze-out). In the early stages of the Bulgarian market, it appears that the benefits of government majority ownership outweighed the costs.<sup>5</sup>

The existence of a strong owner (more than 25% of equity and no other large owners) positively affects the probability of delisting, but this variable is negatively correlated with the government's retaining a majority stake. Recall from Table 6 that only 66 firms have no large owners after privatization. Regardless, the finding suggests that a large owner increases the odds of delisting. The positive effect of a controlling blockholder on the probability of delisting is consistent with a result in Atanasov (2004), who shows that the existence of a controlling blockholder is associated with a 40-60% discount in firm market value.

Table 8 shows the relationship between liquidity (as measured by number of trades), ownership structure, and delisting. Firms that are eventually delisted have significantly lower liquidity even after controlling for firm size, export sales, and ownership structure. If the number of trades proxies for the willingness of small investors to buy and sell shares of particular firms, then this result suggests that small shareholders correctly predict the intentions of large (or majority) owners regarding expropriation.

#### *4.2. Financial tunneling mechanisms—dilution and tender offers*

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<sup>5</sup> We are grateful to Cliff Holderness for this observation.

Table 5 shows that 13% of the sample firms have at least one trade in a three-month window before their delisting. These tend to be the largest and most liquid firms in the sample. Their relatively higher liquidity implies that these firms were more visible to the public and seen as better investments for minority owners. To delist these companies, the controlling blockholders took advantage of the “old” securities laws. One common freeze-out strategy was to make a secondary offering to dilute the minority shareholders’ stake. To further drive down prices in companies that traded frequently, majority owners often engaged in block trades with related parties prior to the tender offer.

Table 9 provides five examples of this type of trading. The table illustrates situations in which possible manipulative trading reduced the weighted-average stock price in the three months before delisting. This three-month average price is the minimum tender offer price for minority shares under the provisions of the pre-2002 securities law. If the midpoint of the trading range for the six months before the large (or block) trade is the basis, then large trades are done at an average discount of approximately 75% for the five cases shown. The size of the large (block) trades is between 50 and 170 times the average trade size for the prior period. Already subject to a deep minority discount, the shares of the five companies in Table 9 have very little liquidity in the three months prior to the large trades, with an average of fewer than ten trades per company. These block trades would drive the average price calculation. Delisting occurs within three months in each case and sometimes within days of the large trades.

Table 9 provides a rare glimpse of market manipulation of the appraisal price in a tender offer (Hermalin and Schwartz, 1996). In the case of Bulgarian tender offers, awarding the pre-freeze-out market price to minority shareholders would have left them with less than intrinsic value due to manipulation of thinly traded positions. The results thus reflect the danger of relying solely on the market to determine appraisal values in an emerging economy (Black and Kraakman, 1996).

Table 10 provides a broader-based empirical analysis of dilution in the Bulgarian market. We develop a measure of dilution that is illustrated by the following example. Suppose that a firm has 1,000 shares, with a majority shareholder owning 500 of the shares and the remainder distributed among small investors. The majority shareholder issues 9,000 new shares and then purchases all of them. This nine-fold increase in shares results in a majority block increase from 50% to 95%, while the minority block drops from 50% to 5%. Let us define *minority*

*shareholder dilution* as the ratio of the change in minority ownership (or one minus the majority block) from the year before the secondary share issue to the year after and the minority ownership in the year after. Minority shareholder dilution in our example equals  $((1 - 0.5) - (1 - 0.95)) / (1 - 0.95) = 9$ . If we then define the *equity increase* as the percentage increase in the total number of shares from the year before the secondary issue to the year after, then the equity increase in our example will equal  $(10,000 - 1,000) / 1,000 = 9$ . By construction, minority shareholder dilution will always equal the equity increase for any secondary offer if the majority shareholder purchases all newly-issued shares. In contrast, if all shareholders participate pro rata in a secondary offer, then minority dilution will equal zero. A regression of our dilution measure on the equity increase thus provides an empirical assessment of shareholder dilution from secondary equity offers. A coefficient of one on equity increase is evidence of complete minority dilution, while a coefficient of zero suggests no minority shareholder dilution.

Table 10 reports the results from the estimation of such a regression for each year between 1999 and 2003. The results are striking. The coefficient on equity increase is 0.916 for the year 2000. The R-squared in 2000 is 84%. This suggests that during the period of widespread delisting, secondary equity issues severely diluted minority interests. Prior to changes in the legal regime, secondary issues were arguably used only for dilution. Very few minority shareholders participated.

#### *4.3. Impact of changes in laws and regulations*

Table 10 shows a striking change in the dilution of secondary offers following the legal changes in 2002. In 2002 and 2003, the coefficients on equity increase are 0.12 and 0.02, respectively. Moreover, there are only eight large (more than 20%) equity increases in 2002 and 16 in 2003 and the R-squared drops to virtually zero. These results suggest that the 2002 changes in the law, which provided for the mandatory issue of warrants in a secondary offer, have been extremely successful in curbing minority shareholder dilution via secondary equity issuances.

Following the legal changes, there were also significant differences in tender offer premiums. Table 11 provides data for the 23 tender offers made since the changes in securities laws in December 2001. Unlike the tender offers over the period 1998-2001, which occurred at large discounts to intrinsic value, offers after the legal changes show a premium, on average. The magnitude of the change caused by the newly instituted legal protections is striking; the

premium is about 38% for initial offers and over 54% for final offers. More than 20% of the offers are revised upwards to secure minority shareholder agreement and the approval of the SSEC of the tender offer price.

The premiums following the changes in securities law in Bulgaria are very close to those found in DeAngelo et al. (1984) for going-private transactions in the U.S. As in the U.S., minority shareholders in Bulgaria can now veto the tender offer and put the majority into a bilateral monopoly with them over control rights (DeAngelo et al., 1984). Furthermore, even if minority shareholders are passive, the Bulgarian securities regulator has to approve all tender offer prices and frequently requires their upward revision.

Table 12 further shows the effectiveness of the 2002 legal changes in restoring investor confidence and equity values through a firm fixed-effect regression of quarterly P/E ratios on a before-after law change dummy. In all specifications the increase in P/E ratios after the legal changes, as measured by the coefficient on the dummy, is statistically and economically significant. For example, the conditional difference of P/E ratios between 2000 and 2002 captured by the dummy in Model 1 is 5.59. This is almost a 100% increase over the average P/E ratio for 2000 of 5.9.

The change in the overall valuations of the BSE is illustrated in Figure 1, which shows the BSE SOFIX index hitting a bottom in mid-2001. The rise since the passage of the new laws in early 2002 has been significant. By the end of 2003, the index value was nearly six times its value in mid-2001.

## **5. Operational Tunneling**

The 2002 changes in Bulgarian securities law dealt quite successfully with freeze-outs and dilution—two effective methods of financial tunneling. However, the law did not address the second and more widespread form of tunneling, which is operational tunneling or what Johnson et al. (2000) label “self-dealing.” One of the most common methods of operational tunneling is through transfer pricing and other related-party transactions.

Anecdotal evidence suggests that transfer-pricing tunneling mechanisms became more prevalent after the legal changes in 2001. Most majority owners of Bulgarian firms were incorporated in offshore zones like Cyprus or the Cayman Islands. These zones were carefully



chosen because of tax treaties with Bulgaria that limit the tax on company profits to 5-15%. After incorporating in a zone with low corporate tax rates, the majority shareholder could charge the Bulgarian firm for outside services or the sale of intangible assets like technology or reputation. In effect, cash from the Bulgarian firm was being tunneled to the offshore company. Other similar transactions involved sales of underpriced assets to fully owned subsidiaries, or revaluation of fixed assets to increase depreciation and show lower earnings per share.

Operational tunneling thus has two effects. The first is to reduce the taxable income of the Bulgarian firm, thereby reducing the income tax due. The second effect is to reduce the wealth of minority owners and tunnel this wealth into the hands of the majority shareholder. It is important to note that in the case of operational tunneling, the government tax authorities have exactly the same interests as the minority shareholders. Freeze-outs are an entirely tax-neutral event, and the government can protect minority shareholders only by invoking securities laws and imposing civic penalties for fraudulent behavior by controlling blockholders. With transfer pricing and other forms of operational tunneling, however, the government can prosecute controlling owners under criminal law for tax evasion. To avoid tax-related penalties, majority owners might limit themselves to tunneling relatively small amounts out of the firm in related-party transactions.

Operational tunneling through related-party transactions also has very different effects on the timing and sharing of monitoring and restructuring benefits. Gilson and Gordon (2003) stress this difference between freeze-outs and operational tunneling. If a freeze-out is possible, a majority shareholder has incentives to postpone any significant restructuring efforts until after taking the company private. The controlling blockholder even has incentives to destroy firm value or temporarily depress stock prices (as in Table 9). If freeze-outs at depressed prices are not allowed under the law and majority shareholders can extract private benefits of control only by operational tunneling (self-dealing), they still have incentives to restructure their companies, monitor managers, and invest in other activities that increase firm value. Some of these benefits will accrue to minority owners, as shown in theoretical models by Atanasov (2002) and Bebchuk and Jolls (1999).

Operational tunneling might be more benign than financial tunneling for several sound reasons, but it is still tunneling. Ironically, the recent situation in certain developed markets is the reverse of the Bulgarian scenario. Efforts to curb operational tunneling methods like

excessive loans to insiders in the United States have led to additional laws and regulations affecting accounting and governance (for example, Sarbanes-Oxley). Consistent with the Johnson et al. (2000) arguments, the higher cost of operational tunneling appears to be bringing financial tunneling back into vogue in the United States in the form of increased going-private activity (Pritchard, 2004; Subramanian, 2004; Bates et al., 2004).

## **6. Summary**

This paper examines how law affects finance in an emerging market through its impact on tunneling. We provide empirical evidence on the freeze-out of minority shareholders on the Bulgarian Stock Exchange (BSE). Over the period 1999-2001, about two-thirds of the firms on the BSE were delisted following tender offers from majority shareholders. Relying on detailed trade, price, and ownership data, we focus on the impact of provisions that permitted minority shareholders' interests to be diluted and then purchased at deeply discounted prices via tender offer. Unlike prior studies on emerging markets, which provide macro- (economy) level analysis or case study evidence of expropriation, we perform an empirical analysis on a sample of more than 1,000 companies.

Despite the existence of legal provisions that enabled freeze-outs, about one-third of the firms on the BSE were not delisted during the 1998-2001 period. Firms that survived were relatively large in size, had greater percentages of export sales, and tended to have a higher percentage of government ownership. This finding suggests that the presence of implicit control mechanisms, such as reputation or political cost, matters even in emerging markets.

Freeze-outs of minority shareholders became much more difficult after changes in Bulgarian securities laws in 2002. Majority holders could no longer unilaterally issue themselves shares, and minority shareholders had strong appraisal rights in tender offer transactions. Upon adoption of the changes, minority dilution via equity issuances has virtually disappeared, while tender offers (which had been occurring at a discount of about 75%) began to show an average premium of about 50%. Initial tender offer bid premiums and revisions following the securities law changes in Bulgaria closely approximate those observed in developed markets such as the U.S. (DeAngelo et al., 1984).

Our analysis thus sheds light on the costs and choices of tunneling behavior, with implications for both emerging and developed markets (Johnson et al., 2000). In an emerging

market, however, protecting minority shareholders from financial tunneling with securities laws is critical due the weakness of other constraining mechanisms (Black and Kraakman, 1996). Consistent with these claims, we find that financial tunneling has a dramatic effect on stock market integrity and equity valuations.

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Table 1  
Tunneling Methods and Their Implementation in Bulgaria

Tunneling Method	Research Studies	Implementation in Bulgaria
<b>1. Financial Tunneling</b>		
Freeze-out	Gilson and Gordon (2003) Bates et al. (2004) Subramanian (2004)	Tender offer close to three-month weighted-average stock price. Often this price is manipulated with wash-out sales of stock shortly before tender offer. The price is 70%-80% below the value of minority shares. Company is then delisted from the public register and minority shareholders receive little for their ownership stakes.
Transfer of control via merger	Gilson and Gordon (2003)	N/A
Dilution	Black and Kraakman (1996)	Majority shareholders initiate a large increase in equity capital at a price well below the current market price. The majority shareholder then makes the subscription process difficult for minority shareholders to participate in and buys all unsubscribed shares. The process results in a significant increase of the majority shareholder stake in the company at the expense of minority owners.
<b>2. Operational Tunneling</b>		
Transfer pricing	Johnson et al. (2000)	Majority shareholders engage in transactions that favor suppliers or customers in which the majority owner also has an interest.
Other non-arm's-length transactions	Cheung et al. (2004)	Payment of excessive wages and benefits; earnings management; sale of intangibles at below market value to related parties.

Table 2  
Changes in Bulgarian Corporation Law in 2002

Statute	Pre-2002	2002
<b>Preemptive Rights</b>	Minority shareholders can participate in new equity offerings. If they do not participate, the controlling shareholder can purchase all unsubscribed shares.	Stock warrants are required to be issued upon every capital increase—one warrant for each share. The preemptive rights of shareholders in public companies can still be extinguished if not exercised within the period determined by a general meeting of shareholders. This period cannot be less than one month from publication of the notice to subscribe shares in the State Gazette. The key difference is that shareholders can sell the warrants to other shareholders or third parties, as opposed to having to exercise their preemptive rights by buying the shares themselves. Majority shareholders are now put in the position of having to purchase the warrants in order to increase proportional ownership, rather than just taking control of unsubscribed shares when the minority did not buy them.
<b>Appraisal Rights</b>	In a going-private transaction, a controlling shareholder should offer at least the weighted-average stock price from the last three months of trading	<ol style="list-style-type: none"> <li>1. A controlling shareholder should extend a mandatory tender offer to remaining shareholders when reaching 50%, 67%, and 90% ownership in the firm. A controlling shareholder can initiate a going-private transaction only when reaching 90%.</li> <li>2. Minority shareholders should receive a fair price for their shares in tender offers and going-private transactions. A fair price is computed using discounted cash flow and comparable company multiples valuation methods and is compared to the average stock price for the last three months, excluding block trades. Minority shareholders should receive the higher of the two prices.</li> <li>3. A majority of minority shareholders has to approve going-private transactions.</li> <li>4. The SSEC has to evaluate the price in going-private transactions and approve tender offers only if they meet the “fair value” requirements.</li> </ol>

**Table 3**  
**Summary Statistics for the Bulgarian Stock Exchange\***

This table shows the number of firms trading on the Bulgarian Stock Exchange Free Market and the monthly volume for the periods listed. The volume numbers are in Bulgarian levs (BGN). One Bulgarian lev has a fixed exchange rate of one Deutsche Mark or between 1.8 and 2.2 U.S. dollars for the 1998-2002 period.

<b>Date</b>	<b>No. of Issues</b>	<b>Monthly Volume (BGN)</b>
May 1998	1,040	9,071,085
December 1998	979	17,884,170
December 1999	828	9,780,590
December 2000	478	9,137,416
December 2001	372	1,510,259
December 2002	325	18,786,093

\*Source: Bulgarian Stock Exchange web site: <http://www.bse-sofia.bg/>



Table 4  
Average Number of Trades per Year for Different Types of Listed Firms

Only firms that remain listed on the BSE through December 2002 are used in the computation of the average number of trades per year. Ownership structure is measured at the beginning of 1998. Large owners are owners of more than 25% of firm equity. Small owners are owners of less than 25% of firm equity. Majority owners own more than 50% of firm equity.

<b>Firm Type</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>
Government keeps control	95.4	50.0	85.6	46.7	79.9
Small owners	22.3	18.3	9.8	7.5	7.8
Two large or two small owners	19.3	8.3	4.2	7.8	9.7
One large owner	17.9	15.1	11.3	12.2	13.9
One majority owner (coalition)	19.7	20.7	6.2	15.9	22.5

Table 5  
 Characteristics of a Sample of 100 Firm Delistings during the Year 2000

A sample of 100 companies was randomly chosen from all companies that were delisted in 2000. Information on the nature of delisting (tender offer or shareholder assembly decision) and the ownership stake of the largest shareholder was acquired from the Central Depository Agency in Sofia, Bulgaria. The trade data are taken from the BSE tapes. Returns are computed using the last trading price of a delisted company as long as it is within three months before delisting as the final price, and the most recent trading price that is at least six months before delisting as the beginning price. The P-value for the hypothesis that the return is equal to zero is in parentheses.

<b>Characteristics</b>	<b>Value</b>
Average percent of equity owned by the largest shareholder	50.44%
Minimum percent of equity owned by the largest shareholder	20%
Maximum percent of equity owned by the largest shareholder	95%
Percent of firms that have no trades within three months before delisting	87%
Average return for the firms with at least one trade three months before delisting	-0.1670 (0.0946)

Table 6  
 Characteristics of Mass Privatization Firms and Firm Delistings

Of the original 1,040 privatized firms, 191 firms are not covered by the Bulgarian SEC. Nine additional firms are delisted due to bankruptcy or merger. The removal of 200 (191+9) firms reduces the sample to 840 firms. Firm size is measured by book value of equity (each firm was assigned a number of shares by the government before privatization, and all firms' shares had the same book value, therefore size equals book value of equity). Ownership structure is measured at the beginning of 1998. Large owners are owners of more than 25% of firm equity. Small owners are owners of less than 25% of firm equity. Majority owners own more than 50% of firm equity.

<b>Firm Type</b>	<b>Number of Firms</b>	<b>% Delisted</b>	<b>Average Size of Listed Firm</b>	<b>Average Size of Delisted Firm</b>
Government keeps control	167	0.43	1,101,727	375,175
Small owners	66	0.68	147,028	36,045
Two large or two small owners	84	0.71	340,008	64,256
One large owner	300	0.71	195,840	70,615
One majority owner (coalition)	223	0.73	272,419	65,772
All	840	0.66	520,459	105,347

Table 7  
Logit Models of Firm Delistings

Of the original 1,040 privatized firms, 191 firms are not covered by the Bulgarian SSEC. Nine additional firms are delisted due to bankruptcy or merger. The removal of 200 (191+9) firms reduces the sample to 840 firms. The dependent variable equals one if a firm is delisted in the period January 1998 to December 2002. Firmshr equals the number of shares that each firm was assigned by the government before privatization. All firms' shares had the same book value therefore this variable equals book value of equity. Strongowner is a dummy equal to one if a firm has either a majority owner or an owner of more than 25% equity and no other large owners. Governmentowner is a dummy equal to one if a firm is more than 50% government owned after the mass privatization auctions. Exportsales equals the ratio of export sales to total sales for 1995. The logit models are estimated using maximum likelihood. P-values are in parentheses.

Variable	Model 1	Model 2	Model 3
Firmshr	- 2.0189 (0.000)	-1.8332 (0.000)	-1.8321 (0.000)
Strongowner	0.3484 (0.031)	n.a.	0.0774 (0.709)
Governmentowner	n.a.	-0.6173 (0.002)	-0.5574 (0.030)
Exportsales	-0.6731 (0.015)	-0.6122 (0.028)	-0.6114 (0.028)
Constant	0.9413 (0.000)	1.2397 (0.000)	1.1793 (0.000)
	Number of obs = 840	Number of obs = 840	Number of obs = 840
	LR chi2(2) = 94.49	LR chi2(2) = 99.07	LR chi2(2) = 99.21
	Prob > chi2 = 0.0000	Prob > chi2 = 0.0000	Prob > chi2 = 0.0000
	Pseudo R2 = 0.0876	Pseudo R2 = 0.0918	Pseudo R2 = 0.0920

**Table 8**  
**Determinants of Firm Liquidity**

Of the original 1,040 privatized firms, 191 firms are not covered by the Bulgarian SEC, and nine additional firms are delisted due to bankruptcy or merger. The removal of 200 (191+9) firms reduces the sample to 840 firms. The sample is further reduced to 744 firms because 96 firms either have no trades on the BSE or their firm names were not matched to tickers in the BSE data. The dependent variable is the log of average number of trades per year. Firmshr equals the number of shares that each firm was assigned by the government before privatization. Strongowner is a dummy equal to one if a firm has either a majority owner or an owner of more than 25% equity and no other large owners. Governmentowner is a dummy equal to one if a firm is more than 50% government owned after the mass privatization auctions. Exportsales equals the ratio of export sales to total sales for 1995.

<b>Variable</b>	<b>Model 1</b>	<b>Model 2</b>	<b>Model 3</b>
Firmshr	0.4054 (0.000)	0.3803 (0.000)	0.3803 (0.000)
Strongowner	-0.2583 (0.002)	n.a.	-0.0394 (0.709)
Governmentowner	n.a.	0.4946 (0.000)	0.4636 (0.001)
Exportsales	0.3965 (0.005)	0.3277 (0.005)	0.3262 (0.022)
Delisted	-0.7916 (0.000)	-0.7472 (0.000)	-0.7471 (0.000)
Constant	1.8619 (0.000)	1.6666 (0.000)	1.7029 (0.000)
	Number of obs. = 744	Number of obs. = 744	Number of obs. = 744
	F(4, 739) = 81.80	F(4, 739) = 85.94	F(5, 738) = 68.70
	Prob > F = 0.0000	Prob > F = 0.0000	Prob > F = 0.0000
	Adj R-squared = 0.3031	Adj R-squared = 0.3138	Adj R-squared = 0.3130

**Table 9**  
**Examples of Possible Use of Large Trades to Reduce Delisting Price**

The examples are identified from the BSE tapes, by looking only at times when the last trade before delisting is 50 or more times the average trade size for the year before delisting. The price range is taken over the six months before the last trade.

<b>Firm Name</b>	<b>Range before trade</b>	<b>Price of large trade</b>	<b>Description</b>	<b>Date of trade</b>	<b>Delisting date</b>
Plastimo, AD	5.00-5.00	1.00	One trade at 50 times average trade size	4 April 2000	5 July 2000
Preslav –AH, AD	2.68-3.51	1.05	Two trades each of 100 times average trade size	12-19 May 2000	25 May 2000
Sintermat, AD	11.99-13.00	2.50	Two trades of 65 times average trade size	4-6 Oct 2000	29 Nov 2000
Ropotamo, AD	13.66-20.70	1.12	One trade at 170 times average trade size	9 Nov 2000	10 Jan 2001
Loviko Chirpan, AD	10.00-10.00	4.16	One trade at 56 times average trade size	15 Mar 2000	8 June 2000

Table 10  
Dilution and Equity Issuance

We define a minority shareholder dilution measure as  $((1 - a_1) - (1 - a_2)) / (1 - a_2)$ , where  $a_1$  and  $a_2$  are the majority owner stakes before and after a secondary equity issuance, respectively. If a majority shareholder purchases all shares in a secondary equity issue, the dilution measure will be identical to the increase in equity capital. The increase in equity capital is measured as  $(E_2 - E_1) / E_1$ , where  $E_2$  and  $E_1$  are the number of shares at the end of year 2 and year 1, respectively. If the majority owner buys a proportionate stake in the secondary equity issue and minority shareholders participate proportionately, the dilution measure should be zero. The table below reports the results of a regression in which the dilution measure is the dependent variable and the equity increase is the independent variable. If there is full dilution, the coefficient on equity increase should be one. If there is no dilution, the coefficient should be zero. The majority stakes and number of shares are measured at year-end. The data on number of shares outstanding and the size of controlling blocks are obtained from the Bulgarian Central Depository. The regressions include only observations where the number of shares has increased by more than 20% from one year to the next. P-values are in parentheses.

	1999/1998	2000/1999	2001/2000	2002/2001	2003/2002
Coefficient on Equity Increase	0.0490 (0.001)	0.9156 (0.000)	0.3032 (0.085)	0.1195 (0.610)	0.0203 (0.044)
Intercept	0.4479 (0.029)	-0.3694 (0.132)	0.6714 (0.515)	0.1177 (0.840)	-0.0375 (0.785)
Number of Observations	64	26	18	8	16
Adjusted R <sup>2</sup>	0.1497	0.8431	0.1227	-0.1129	0.2061

Table 11  
 Characteristics of Tender Offers Announced After the 2001 Changes in Securities Law

Tender offers are identified using keyword searches in the BSE news archive. The market price is computed as the equally weighted average stock price for the last three months before the announcement. Offers announced between July 2001 and December 2002 are included. The nine offers announced between July 2001 and December 2001 are considered because the government was discussing the law changes in Parliament during that period. Of the 27 tender offers, two offer announcements have missing prices. Two other firms have no trades in the three months before the announcement. This reduces the sample to 23 observations. P-values for the hypothesis that the mean of the premium is zero are in parentheses.

<b>Characteristics</b>	<b>Value</b>
Number of tender offers	23
Average percent of equity sought	0.1314
Average premium to market price for initial tender offers	0.3762 (0.002)
Number of offer prices that are revised upwards	6
Average increase of tender price of revised offers	0.4655 (0.044)
Average premium for final offers	0.5477 (0.001)



Table 12  
Regression of P/E Ratios before and after Law Changes

The dependent variable in the regressions is P/E ratio computed as the equally weighted average stock price for each calendar quarter divided by the EPS for the previous year. Prices are obtained from the BSE trade tapes. Earnings per share are collected from annual financial statements available from the SSEC. Observations where EPS are negative or less than 0.01 Bulgarian lev are dropped. Only firms that have at least one non-missing P/E ratio before and after the law change are kept. Each regression includes firm-specific fixed effects. The post-law-change dummy in Model 1 equals one for calendar quarters in 2002 and zero for calendar quarters in 2000. The post-law-change dummy in Model 2 equals one for calendar quarters after September 30, 2001 and zero for quarters before. The post-law-change dummy in Model 3 equals one for calendar quarters after December 31, 2001 and zero for quarters before. The post-law-change dummy in Model 4 equals one for calendar quarters after March 31, 2002 and zero for quarters before. P-values for the hypothesis that post-law-change dummies are equal to zero are in parentheses.

	Model 1	Model 2	Model 3	Model 4
Post-law-change dummy	5.5940 (0.004)	4.9941 (0.007)	5.5350 (0.016)	3.1449 (0.143)
Average P/E when Post-law-change dummy equals 0	5.9309	7.3341	8.7414	9.4167
Number of firm fixed effects	35	79	62	68
Number of Observations	217	541	458	477

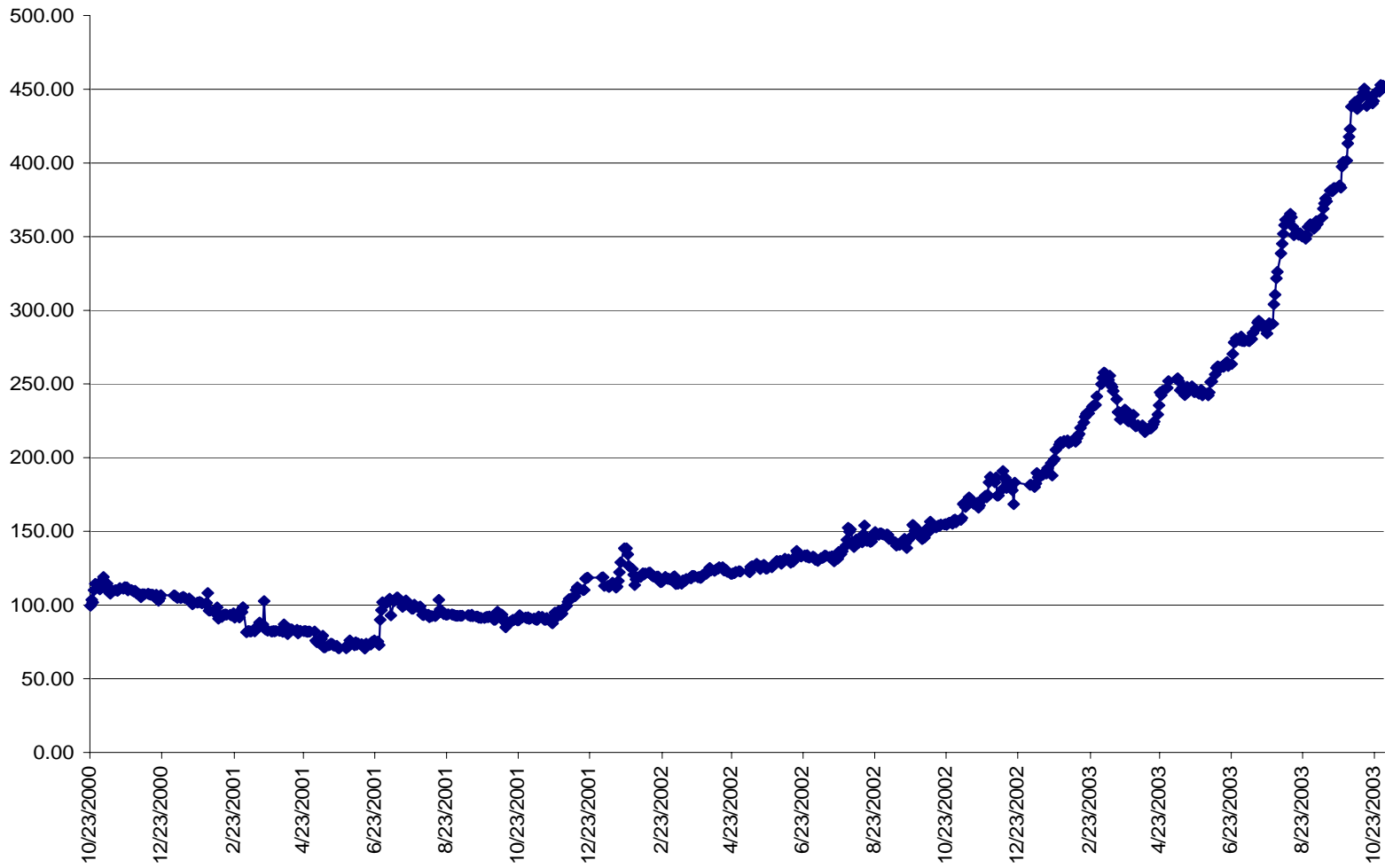


Figure 1. Performance of the Bulgarian Stock Exchange Index SOFIX in the period between October 2000 and October 2003.

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