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### The impact of institutional investors on equity markets and their liquidity

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# Chapter 1

## Introduction

### 1.1 Motivation

The financial services industry around the world changed substantially over the last two decades. The factors behind this change are technological advances, demographic pressures and financial liberalization. First, advances in information technology resulted in a significant fall in the direct costs of trading, and improved the availability and access to information. Cheaper and easier access to financial markets increased the participation of individual and institutional investors, thus proliferating the trading volumes and the importance of financial markets around the world.<sup>1</sup>

Second, demographic pressures such as the aging of the population have made the government sponsored pay-as-you-go pension schemes untenable in many countries. Consequently, the shift towards funded pension systems has been observed. More countries today encourage the private provision of pensions and allow for more equity holdings in the portfolios of pension funds. As a result, the assets of institutional investors which hold retirement assets, such as pension funds, insurance companies and mutual funds, have grown substantially.<sup>2</sup> Along with assets, the equity holdings of institutional investors have also

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<sup>1</sup>For illustration, the trading volume as a % of market capitalization in the US and Germany increased from 70% and 98% in 1994, to 141% and 167% in the first quarter of 2000, respectively (Claessens et al. (2000)).

<sup>2</sup>The majority of global assets under the management of non-bank financial institutions today consists of pension fund assets. Out of USD 30 trillion worth of global assets under management, USD 8.2 trillion was held by pension funds at the end of 1997. About USD 5.3 trillion was in mutual fund assets, USD 6.4 trillion in fiduciary assets of insurance companies and about USD 2.1 trillion in the off-shore assets of wealthy private clients (Walter (1999)). For comparison, the value of global bank assets was USD 37 trillion at the end of 1997, while the global stock and bond market capitalization amounted to about USD 42 trillion (Walter (1999)).

increased significantly in recent years.<sup>3</sup> By institutional investors we mean non-depository financial institutions such as pension funds, insurance companies and investment companies.<sup>4</sup> Pension funds and mutual funds have become the largest holders of equities in many countries around the world. For example, the equity holdings of pension funds and investment companies in the OECD area increased on average by 20% a year between 1990 and 1997.<sup>5</sup> This increase is a result of both the search for higher returns in order to be able to pay out pensions to future retirees, and the deregulation of the financial services industry.

Third, the deregulation of securities and banking services (since the 1980s) has increased the competition in the financial services industry and induced banks to get into the insurance business. The process of disintermediation and the lost 'monopoly' on deposits has forced banks to offer mutual funds. The liberalization of activities of institutional investors and the relaxation of regulatory constraints on their investments and cross-border activities have induced the further growth of institutional investors.<sup>6</sup> For illustration, the assets of institutional investors in the OECD countries grew from USD 3.2 trillion in 1981 to USD 16.3 trillion in 1991, and further to USD 24.3 trillion in 1995. Institutional investors are using financial markets more intensively than before and consequently are becoming important players in the financial markets. For this reason, it is interesting to see how institutional investors influence the markets they trade on.

The impact of institutional investors on the financial market is the subject of analysis in this dissertation. We are particularly interested in institutional investors' impact on the liquidity of equity markets. We analyze different theoretical aspects of the relationship between institutional investors and market liquidity, and we present the empirical evidence on this relationship. Furthermore, we test some implications of the models on data from two transition economies: Slovenia and Hungary. Both economies implemented substantial changes in their financial markets within a very short time, which were accompanied by major economic reforms. Slovenia and Hungary also display high growth rates of institutional investors and capital markets, but the impact of the former on the liquidity of the latter has not been studied so far.

Our empirical analysis focuses on one particular group of institutional investors, namely mutual funds. We show that these institutional investors affect the liquidity of the Hungarian and the Slovenian equity markets differently. Hungarian mutual funds show very little impact on the equity market organized within the Budapest Stock Exchange. In contrast, Slovenian closed-end funds exhibit a significant and negative impact on the liquidity of

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<sup>3</sup>In the OECD countries, the investment of institutional investors in shares grew on average by 18% a year in the period 1990-1997 (see OECD Financial Market Trends, June 2000).

<sup>4</sup>Investment companies encompass open-end funds, closed-end funds and unit trusts. See Fabozzi (1999) for a detailed description of the different kinds of investment companies.

<sup>5</sup>OECD Financial Market Trends, June 2000.

<sup>6</sup>See OECD Financial Market Trends, November 1997. For example, the assets of institutional investors already represent over 200% of GDP in the US and in the UK. The assets of institutional investors in transition economies, e.g., remain below 20% of GDP (see Claessens et al. (2000)).

shares traded on the Ljubljana Stock Exchange. The strength and the sign of the impact seem to be driven by the financial infrastructure of the two countries, in particular by the respective legal environments.

## 1.2 Main issues

Our analysis focuses on the impact of institutional investors on the liquidity of equity markets.<sup>7</sup> We discuss three separate issues relating to the impact of institutional investors on liquidity.

The first issue is the role of capital markets and institutional investors within the economy. We ask the following questions: What are the functions of the financial system? What are the comparative advantages of capital markets and financial intermediaries in performing these functions? What is market liquidity and how can we measure it?

The second issue is the effect of institutional presence on the equity markets. The most important questions we ask here are the following. How do institutional investors affect equity markets? What is the impact of the trading strategies of institutional investors on market prices of shares and their volatility? How do the inflows of money to institutional investors affect market liquidity? What is the empirical relationship between the institutional ownership of firms and market liquidity?

Third, we look more closely at the determinants of the relationship between institutional investors and market liquidity. We provide answers to the following questions. How do information asymmetries among traders affect trades by institutional investors and market prices of shares? How do risk aversion and the free-rider problem influence the trading and diversification opportunities of institutional investors? How do these factors affect the incentives of institutional investors to become active shareholders? What are the implications of the different ownership structures for market liquidity? How does institutional ownership affect the market liquidity of shares? The answers to these questions will show that institutional investors may either enhance or reduce the liquidity of capital markets.

We follow different paths in addressing these issues. From the theoretical perspective, we try to gain more insight into the impact that can be expected from institutional investors, as determined by the sophistication of the markets, the ownership structure of firms etc.

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<sup>7</sup>Equity markets are sometimes also called stock markets. A stock market is a market for shares of stock, while an equity market also includes trading with equity stakes of firms that are not incorporated. Stock exchanges are the organized and most transparent stock markets. However, in many countries shares are not the only securities that are traded on the stock exchange. To avoid any possible confusion between stock markets and stock exchanges, we sometimes use the term *equity* market instead of *stock* market. The term *stock* market prevails in theoretical literature, so we use it accordingly. European authors typically use *equity* market more frequently than *stock* market.

The second path we follow is empirical. We conduct a detailed investigation of the impact of mutual funds on the liquidity of the organized equity markets in Hungary and Slovenia, and we compare these results with evidence from elsewhere. We suggest some alternative ways of measuring the impact of institutional investors on market liquidity when transactions data is unavailable. Furthermore, we present those institutional aspects of the Hungarian and Slovenian economies that are relevant to our analysis.

### 1.3 Outline of the dissertation

The outline of the dissertation is as follows. The dissertation consists of eight chapters and a summary. Following this introduction, Chapters 2, 3 and 4 review the relevant literature on the role of capital markets, market liquidity and the impact of institutional investors. In Chapter 5 we consider the theoretical aspects of the relationship between institutional investors and equity market liquidity. We discuss the theoretical models that deal with this relationship, thus combining insights from the market microstructure literature with the insights from the literature on ownership structure and corporate governance. In Chapters 6 and 7 we conduct an empirical analysis of the impact of institutional investors on the equity markets of Hungary and Slovenia. In Chapter 8 we compare the results of these two studies. A more detailed outline of the study is given below.

In Chapter 2 we focus on the role of capital markets within the financial system. By capital markets we mean the equity and debt markets in which firms raise the necessary capital. We first discuss the functions that a financial system performs within the economy. Then we evaluate the comparative advantages of financial intermediaries and capital markets in performing these functions. We emphasize the importance of financial regulation and the legal environment for the development of capital markets and their sustainability. We point out privatizations and pension reforms as two factors that have recently provided an additional stimulation for the proliferation of capital markets, in particular in transition economies. We complete the chapter with a discussion of the role of capital markets in transition economies. Capital markets in these economies still do not seem to perform the functions that theory assigns to them.

Chapter 3 is devoted to liquidity. We provide a set of definitions of market liquidity and discuss the main components of liquidity costs. These are the following: the cost of processing orders, inventory costs, adverse selection costs and opportunity costs. It has been argued that asymmetric information among market participants is perhaps the most important source of these costs. We discuss two determinants of market liquidity, i.e. the organization of the market and the competition among traders and market places, in more detail. At the end of the chapter, we provide a list of measures of liquidity of individual assets, and discuss the various ways in which the liquidity of the market as a whole can be assessed.

Chapter 4 introduces institutional investors. We briefly describe their types and organization, and we contrast them with individual investors. In the main body of the chapter we review the empirical evidence on the consequences of institutional presence in capital markets for their liquidity. In particular, we look at the evidence on the trading patterns and trading preferences of institutional investors, the effects of institutional ownership on market liquidity and the impact of money flows to institutional investors on the market prices of shares and their volatility. Empirical evidence suggests that institutions have a significant impact on the liquidity of some shares. Similarly, the studies of ownership structure and net flows of money to institutional investors suggest that they have a significant impact on the market liquidity of shares, their prices and volatility. Overall, the empirical evidence is inconclusive in the sense that it suggests that institutional investors can have both favorable and unfavorable impacts on the liquidity of capital markets.

In Chapter 5 we discuss theoretical models that relate institutional investors to liquidity. The models we review come from the market microstructure literature and the literature on ownership structure and corporate governance. According to these models, asymmetric information, free-riding by non-informed investors, costs of monitoring and ownership structure of firms are crucial determinants of the relationship between institutional investors and liquidity. The models show how liquidity can become an incentive for institutions to collect more information and monitor firms, and how liquidity can be used to mitigate the free-rider problem in monitoring. A discussion of the implications that the ownership structure of a firm and type of equity offering have for liquidity completes the chapter.

Chapter 6 starts the empirical part of the dissertation. First, we study the Hungarian equity market and the extent to which the recently established mutual funds and pension funds contribute to its liquidity. Hungarian mutual funds developed independently of the mass privatization program. They exhibit high growth rates of the assets under management and in many respects resemble the mutual funds in developed financial systems. One of their most distinguishing features is that they invest only a small part of their assets in shares. We investigate the impact of Hungarian mutual funds on the domestic organized market for shares from two perspectives. First, we investigate the impact of net money flows to mutual funds on the overall market returns. Second, we look at the impact of net fund flows on market liquidity. Our analysis shows that the Hungarian mutual funds have had little impact on the liquidity of the domestic equity market in recent years.

In Chapter 7 we study the impact of mutual funds on the liquidity of the Slovenian equity market. The mutual fund industry that is dominated by the privatization-related closed-end funds, and the organized equity market (i.e. the stock exchange) that constantly faces liquidity problems, provide an interesting arena for such an analysis. We analyze the impact of closed-end funds, also known as PIDs (the Slovenian abbreviation for an authorized investment company) on the market liquidity from three angles: 1) the impact of PID shares on the trading volume of all shares on the Ljubljana Stock Exchange; 2) the impact of PID shares on the overall equity market turnover of the Ljubljana Stock

Exchange; and 3) the impact of PID ownership on the liquidity of listed shares. Our analysis provides mixed results. First, there seems to be a positive temporal dependence between the contribution of PID shares to total market capitalization and the turnover of the rest of the equity market in the period when PID shares were getting listed on the stock exchange. However, it is not statistically significant. Second, the ownership stakes of PIDs and other large shareholders hamper the liquidity of shares that are traded on the stock exchange. This result is statistically significant and robust. It leads us to conclude that the impact of PIDs on liquidity is primarily negative.

Chapter 8 contrasts the results of the empirical analysis of Hungarian mutual funds with our results for Slovenia. Furthermore, we consider the findings on some other transition economies. We present the most important institutional differences between the two countries with respect to the development of their domestic equity markets, the growth of mutual funds and the macro-environment. While Slovenia and Hungary share some characteristics of transition economies, the relationship between capital markets and institutional investors is not one of them. Closed-end funds (PIDs) exhibit an important impact on the equity market in Slovenia, while mutual funds in Hungary have so far shown little impact. The differences have been underpinned by the fact that the Hungarian equity market is one of the most developed and liquid markets in the region, with the strong presence of foreign institutional investors. It is also important that Hungarian mutual funds developed independently of mass privatization. Although both countries experienced similar proliferation of institutional investors in the last decade, its foundations were different. Our results reflect these differences.

Chapter 9 summarizes the main insights that have been developed in this dissertation and suggests some directions for future research.