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Katia Hristova '02  
*Illinois Wesleyan University*

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# **Czech Voucher Privatization: A Case of Decision Making Under Uncertainty**

*Research Honors Project, Department of Economics*

*Spring 2002*

By Katia Hristova

Project Advisor: Dr. Michael Seeborg

# **Czech Voucher Privatization: A Case of Decision Making Under Uncertainty**

*Katia Hristova*

## **I. Introduction**

The collapse of Communism in Central and Eastern European countries in the late 1980's led the countries into a drastic political, social and economic transformation. The fundamental economic restructuring consisted of three main processes: macroeconomic stabilization, market liberalization and privatization. A vital part of this triad, privatization, was expected to restructure the ownership patterns held for the past 50 years, create a social class of entrepreneurs and, thus, change the manner of operation of enterprises and achieve greater economic efficiency (Eggertson, 1997).

Voucher privatization, a kind of large-scale privatization, was of special importance. It was conducted by the Czech Government in order to redistribute property among the population in a situation of complete lack of domestic private capital. All citizens over the age of 18 had the opportunity to obtain a voucher book. However, by providing little information about the process, the Government was really aiming only at the knowledgeable citizens who would be successful entrepreneurs. Voucher privatization was also thought of as a way to speed up the transition in the economy.

In my study, I plan to analyze voucher privatization in the Czech Republic. This process is best characterized as decision making under both risk and uncertainty, where the thousands of individuals who initially received vouchers were operating under near total uncertainty while larger institutional investors who later seized control of the vouchers were operating under conditions of risk. I will analyze the resulting patterns of

ownership in comparison to the goals of the process. I will also discuss the role of the International Monetary Fund and World Bank as institutions which affect the conditions under which voucher privatization was conducted. In particular, I will explore how the situation of asymmetric information in the privatization process led to the establishment of institutions and the concentration of ownership in the hands of a few individuals who have neither the skill nor the incentives to initiate change in the enterprises (Fullerton, 1998. Nellis, 1999).

## **II. Background information on voucher privatization in the Czech Republic**

Three kinds of privatization were used in the Czech Republic – small-scale privatization, large-scale privatization, and restitution. Small-scale privatization targets smaller companies, while large-scale privatization focuses on transferring ownership of large enterprises and corporations. In addition, a distinction is made between classical and voucher-style privatization. The classical methods, often called the standard methods, are auctions, direct sales and tenders. The voucher-style is a non-classical approach that uses coupons instead of currency. The large-scale voucher privatization is the one this paper will be discussing (Schmidt and Schneitzer, 1997).

The legal basis of large-scale privatization is the Large Privatization Act of 1991. It states as possible methods for major privatization, direct sale to "assigned owner" (i.e. without tender), a tender, an auction, a free transfer of shares to local authority, pension fund or health insurance fund, sale of shares on the capital market and voucher

privatization (Nemcova, 1998). Most enterprises were privatised by use of a combination of several of these.

The preparatory period for large-scale privatization started in the autumn of 1991 and finished at the beginning of 1992. It involved privatization project submission and approval. The managers of all state-owned enterprises, which were to be privatised, were obliged to create a proposal that included a full description and evaluation of the firm and their suggestion for its future privatization. All physical and legal bodies interested could also submit a proposal for the privatization of an SOE (state owned enterprise) or a part of it. The Ministry of Administration of National Property and its Privatization<sup>1</sup> reviewed the privatization projects for every company and decided on which ones to implement. The National Property Fund<sup>2</sup>, a public body established by the Government and subordinate to and supervised by the MANPP (The Ministry of National Property and Privatization), was then responsible for materialising the approved projects.

Voucher privatization was conducted in order to redistribute property among the Czech population in a situation of lack of domestic capital. The process is described in the Scenario of the Economic Reforms (1989) as "the one and only possibility of how to involve the broadest section of the population in the process of major privatization within a relatively brief period of time." (Czech Government, Scenario of the Economic Reforms) Voucher privatization is "a process in which a substantial portion of an economy's public assets is quickly transferred to a large, diverse group of private buyers" (Mejstrik, 1997). The process is described in detail in Appendix A.

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<sup>1</sup> Further information on the Ministry of National Property and its Privatization can be found at <http://www.psp.cz/info/government.html>

<sup>2</sup> For more information on the National property Fund and its activities see <http://www.pvtnet.cz/iso/www/rif/>

There were 1,664 companies that had some or all of their assets included in voucher privatization. Voucher privatization took place in two waves, which involved, respectively, five and six rounds. The first wave involved shares in 988 firms. The second included shares in an additional 676 firms plus unsold shares in 185 firms carried over from the first wave. The total book value of the equity privatised through vouchers was more than \$14 billion, about 10 per cent of the Czech Republic's national wealth.

All Czech citizens of the age of 18 and older had the opportunity to buy a privatization coupon. Approximately 75 percent of eligible Czechs participated in each wave, making the book value of the shares available slightly more than \$1,400 per participant in the first wave and \$1,000 in the second wave.

In the first wave 72.2 percent of participants turned their vouchers over to one of the IPFs. In the second wave a somewhat smaller 63.5 percent of participants assigned their points to one of the funds. In addition to those who assigned their points to the funds, between 1.5 and 2 million individuals bid their points themselves.<sup>3</sup>

### **III. Conceptual Framework of Czech Voucher Privatization**

By deciding to conduct voucher privatization the Czech Government was attempting to set up a process in which the country's citizens have the opportunity to acquire ownership and control of former state property. The more knowledgeable voucher holders have a better chance of accomplishing this. Those with knowledge are more likely able to assess the probability of success of various enterprises and thus acquire ownership rights in companies that will produce capital gains for them. This

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<sup>3</sup> For statistics on Czech voucher privatization see <http://www.freedomhouse.org/nit98/czech.html> and <http://src-home.slav.hokudai.ac.jp/eng/cee/czech-e.html>

gives the Government a better chance of achieving its goal – creating a successful and competitive private sector in the Czech economy. Performing a kind of natural selection among Czech citizens was supposed to eventually create a capitalist society in which the economy is run by the people who have the necessary skills and knowledge.

The following sections describe how the Government of the Czech Republic and the IMF are the “rule setters” for the process. The participants in voucher privatization are those who have the opportunity to acquire vouchers. The early participants in the process were individual Czech citizens. Later the players were Investment Privatization Funds – a newly created institution. IPFs were registered as limited liability companies that issue shares of stock against the reception of investment vouchers and subsequently used these vouchers to purchase shares in SOE’s. Only a few of the IPFs were successful and came to dominate ownership and control of the privatized assets.

#### **The Role of the IMF:**

The IMF’s influence on the privatization process in the Czech Republic was significant and ranged from advice to actual agreements. At the urging of the IMF, the process was completed fast, without the necessary legal and institutional framework in place.

The International Monetary Fund (specifically the European Bank for Reconstruction and Development) and the World Bank have both attempted to help the countries of Central and Eastern Europe during their economic transformation. In the words of Michael Camdessus, the Managing Director of the IMF, “Helping these countries to reorient their economies toward market-based systems... has been one of the

Fund's greatest challenges in its 50-year history." (Camdessus, 1994) The IMF has openly encouraged shock therapy. The words of Michel Camdessus demonstrate this:

First, and most important, the most appropriate course of action is to adopt a bold strategy. Many countries... have by now proven the feasibility of implementing policies of **rapid** – and I stress rapid - ... structural reform... What can be said about “gradualism”? The fact of the matter is that gradualism has not been found to be an effective presumption in any of the three major policy areas. (3)

Moreover, it seems that quick structural reform has been a condition for receiving the financial assistance of the IMF:

While all the forms of cooperation have proven essential, I would emphasize how external financing has followed the commitment to and implementation of appropriate policies. (Camdessus, 15)

A detailed description of the IMF's view on the transformation in the Czech and Slovak Republics can be found in the publication by Bijan B. Aghiveli, Eduardo Borensztein, and Tessa van der Willigen (1992), as well as in the annual publication of the European Bank for Reconstruction and Development (EBRD). The International Bank for Reconstruction and Development also analyses the Czech transformation (2002).

### **The Participants in the Voucher Privatization Process**

There are three primary participants: Investment Privatization Funds established by banks, IPFs established by individuals, and the original voucher holders.



### **The Individual Voucher Holders**

The voucher holders, the ones who were meant to participate in the process set up by the Government and IMF were intended to ultimately gain control and ownership of the private sector in the economy. Unfortunately, this did not happen.

The discrepancy in the demand for vouchers expected by the Government and the actual public demand is significant. It was expected that about 30% of all eligible citizens would participate in voucher privatisation. Instead, this figure turned to 75%. The primary reason for this was the clever and massive advertisement campaign of IPFs. The IPFs were successful in making the purchase of vouchers seem even more attractive by making attractive offers of buying out people's shares for 10,000 CZK (about \$250), thus giving them a profit of almost 9,000 CZK (about \$225), were successful in making the purchase of investment coupons seem even more attractive. Also, the sale of the vouchers to IPFs seemed to be the only reasonable opportunity to make profit for the voucher holders. Most of them, therefore, purchased vouchers and then quickly sold those vouchers to IPFs so that they could realize a quick profit and not have to deal with the uncertainty of investing the vouchers by themselves. The process, as setup by the Government and IMF, turned into a missed opportunity for them, because of the new participants and the information asymmetry among participants, discussed in the following sections.

### **The IPFs**

New participants, unforeseen by the rule setters became part of the game. The legal deficiency, which combined with the information asymmetry, was compensated for

through the emergence of an institution – IPFs. Two types of IPFs emerged, each with very different objectives: IPFs established by banks, and IPFs established by individuals.

Most of the shares are still owned and managed by Investment Privatisation Funds. These institutions are mostly owned by Czech Banks. Of these, the "Big Four" - Komerční Banka, Česká spořitelna, CSOB, Investiční a poštovní banka (Mejstřík, 1997) together with the Czech Insurance Company own the vast majority of the established shares. Surprisingly, the controlling shareholder in these five largest financial institutions is the National Property Fund, which is controlled by the state. This situation of state control over a large amount of the privatised property questions the entire success of the voucher scheme. A spider web of confusion is created around the control of the shares owned by the big four banks and the insurance companies, since they each bought controlling shares in the other four.

Other IPFs were established by individuals. The biggest one of this group is The Harvard Capital and Consultings, established by Viktor Kouzeny – a graduate of the Harvard Economics department and a Czech citizen. The Harvard Funds was the first IPF to advertise in the media, and they ended up as the third largest IPF. They acquired a total of 931 million vouchers, which amounts to over 11% of coupon books available. Again, the situation became more complicated when the Harvard Capital and Consultings initiated a joint venture with Stratton Investments, a company also initiated by Viktor Kouzeny. Controlling stakes of Czech companies were transferred to Stratton Investments. It was quickly realised what had happened – voucher privatisation had been used as a way of acquiring ownership and control of a significant part of the Czech economy by one individual.

Looking at the process of voucher privatisation in retrospect, the new owners are not the ones the Government planned for. The new efficiency and governance of firms did not come fast (or not at all in some cases), and the plan for a socially fair way of privatization seems to have turned into a “give-away” of assets. A crude and far from perfect estimate of the amount of money that the voucher holder received from IPFs is about \$750,000,000. This estimate assumes that IPFs paid about 5 million voucher holders about \$150 dollars per voucher. Admittedly, this is a crude estimate, but it does illustrate the point that the amount paid is far less than the cost of the over 1600 enterprises sold in the process. The Czech citizens suffered from the pressure of the IPFs and were deprived of the equal and fair opportunity the Government promised and tried to provide. Very few individuals are now profiting investors by themselves with an active role in controlling units of production in the economy. Largely disappointed with the process, they found their vouchers taken over by bigger and more informed IPFs, which later reregistered as holdings. This added another unfulfilled pre-election promise to the list. The IPFs, probably caused more confusion than they expected and distorted a substantial part of the Czech transformation. In this process the IPFs made a large profit. Carrying their agenda through, they are now well-functioning holdings, owned by millionaires - the new owners of a big part of Czech economic assets.

The establishment of the IPFs and the resulting ownership patterns described can be understood in the context of decision making under risk and uncertainty theories. I present these in the following section.

## **IV. Theoretical Framework**

### **Decision Making Under Risk and Uncertainty**

Many choices that economic agents make involve considerable uncertainty, which has a serious impact on economic relations. Frank Knight (1938), in his book entitled “Risk, Uncertainty and Profits” makes a distinction between “risk” and “uncertainty”. He sees risk in situations where the decision-maker can assign probabilities to the randomness, which he is facing. On the other hand, he defines as uncertain situations in which this randomness cannot be expressed in terms of mathematical probabilities.

Knight's theory of uncertainty is also supported by Keynes, who says:

By 'uncertain' knowledge, let me explain, I do not mean merely to distinguish what is known for certain from what is only probable. The game of roulette is not subject, in this sense, to uncertainty... The sense in which I am using the term is that in which there is no scientific basis on which to form any calculable probability whatever. We simply do not know. (22)

In a situation of uncertainty (randomness with unknowable possibilities), the knowledge assumption which states that all economic agents possess full and symmetric information, is not fulfilled. Thus, a major prerequisite for perfect competition is missing. Lacking any understanding of which decisions are likely to lead to a desired outcome, economic agents still have to make decisions. These decisions, according to Knight, will lead to unexpected economic outcomes. Observations can be made that contradict economic theory, because economic theory is constructed on the basis of competition and some estimate of the expected outcomes of decisions.

Risk, on the other hand is defined as randomness with knowable probabilities. The riskiness of alternative choices can be compared, as well as the probability of each possible outcome. Various measures of risk have been developed. According to people's preferences towards risk, they can take decisions choosing the amount of risk they are willing to bear.

In addition, Thomas Sowell in his book *Knowledge and Decisions* (1980) writes about uncertainty and the cost of knowledge. According to his theory, the "most basic economic decision is who shall decide." Different economic agents that can take a decision may have varying quality, quantity and cost of knowledge. The high personal cost of acquiring expertise in an area would be an incentive to hand the decision over to an institution that has acquired the expertise. In any situation where some economic agents lack information and it is costly or difficult to acquire it, an institution with better or more knowledge is likely to arise spontaneously and make a profit from the uncertainty the other economic agents are facing. However, Sowell believes that the institution is not responsible for this outcome – it is just the messenger conveying the bad news – information is not being transmitted equally.

Privatization funds in the Czech Republic appeared as a new institution because of an information gap, as explained by Sowell's theory. The voucher holders lacked knowledge and it was too costly for them, if at all possible, to acquire it. After the IPFs started to function, the Czech voucher owners were in fact facing uncertainty about the outcomes of their possible investments. The Czech Voucher Privatization Funds, on the other hand, are facing potential risk. The distinction between risk and uncertainty here is used as described in the theoretical section.

Thus, there is a situation of asymmetric information, in which sellers (the original voucher holders) are forced to make an uninformed decisions and buyers (the IPFs) have the opportunity to make an economic profit.

## **V. Empirical model – Czech buyers and sellers of vouchers under uncertainty**

One of the goals of voucher privatisation was to perform a kind of natural selection among Czech citizens. This was supposed to eventually create a society in which the economy is run by the "best" and the production units are in the hands of people who have the skills to make them successful. Creating a capitalist society from scratch could have benefited a lot from such an idea. By giving little information about the process and conducting an intentionally poor advertising campaign, the Czech government was creating an equal, but not egalitarian opportunity for entrepreneurship--a situation in which only the educated, knowledgeable citizens would own investment coupons, since they are the only ones who would know how to manage them and benefit from the process. This, however, created an information deficiency which was compensated for through the emergence of IPFs. The discrepancy in the demand for vouchers expected by the Government and the actual public demand illustrates this. It was expected that about 30% of all eligible citizens would participate in voucher privatisation. Instead, this figure turned to 75%. The clever and massive advertisement campaign of IPFs, combined with attractive offers of buying out people's shares for 10,000 CZK, thus giving them a profit of almost 9,000 CZK, were successful in making the purchase of investment coupons seem even more attractive.

Looking at the founders of the IPFs it is obvious that they were the agents who had a definite advantage in terms of information. Domestic banks had a distinct information edge over the Czech population, based upon both long-established credit ties with the enterprise sector, as well as good connections to the relevant public authorities since the majority of banks are still owned by the state.

The information available to citizens was also not equal and enabled some like Viktor Kouzheni (Harvard Capital) to establish IPFs. Certain citizens had insider information about companies, which others weren't able to use. The information provided for all participants in voucher privatisation by the Government was intentionally insufficient. Consequently, the people who only relied on this and had no other means of obtaining information were left in an unfair position. Apart from making voucher privatisation somewhat non-transparent and putting its fairness under doubt, this facilitated the creation of the IPF as an institution (Hingorani, 1997).

IPFs are institutions that make decisions on behalf of a large number of small investors. The public profits from them because acquiring the information is too expensive for people to acquire and they prefer to have somebody make the decision for them. IPFs also profitted. This is easily seen if we look at the main founders of IPFs. The different founders of IPFs saw different incentives to create the funds. Looking at banks and individuals, we see their motivation and how the information gap between them and the Czech voucher holders created a different incentive structure and outlined their actions.

## 1. IPFs established by banks

The emergence of bank-established IPFs can be regarded as a spontaneous institutional arrangement in a situation of insufficient information. As the state was gradually withdrawing from the economy, lending decisions had to be taken by bank personnel, not ordered by the Government and executed. In order to make corporate lending by banks effective, banks had to develop ways to determine different levels of risk associated with different clients or projects. An information asymmetry between banks and enterprises existed, since the information about enterprises was never available to banks during the communist period and could not become easily available during the process of creating active new owners of firms. Banks that established IPFs and bought shares in different companies made significant progress in terms of information because they could then place representatives on the boards of directors. Having bank staff serving on the boards of directors of firms, provided continuous bank monitoring of the enterprises and resulted in a decrease of the information asymmetry. This led to more efficient portfolio evaluation. In addition, the dual role of banks as shareholders and lenders facilitated the informal workout procedures of problematic loans.

The investment strategy of IPFs established by banks, also demonstrates that the banks' goal was to obtain insider information about enterprises, which would be helpful in making lending decisions. They spread their portfolios evenly among industries. No sectoral specialization or concentration is observed. Banks opted for very diversified portfolios that would allow them to have a member on the board of directors of a wide range of enterprises. Most bank established IPFs bought shares in over 500 different



enterprises (Mejstrik, 1997). This gives useful information that is extremely relevant to lending decisions.

## 2. IPFs established by individuals

Individual IPF founders also saw an information gap that would let them profit. This created an entrepreneurial kind of IPF. The biggest one of those, Harvard Capital and Consulting (HCC), had the most concentrated portfolio of all IPFs. HCC tried to maximize their stakes in companies with a strong starting position in their industry and placed their entire portfolio in monopolistic supply structures. They invested more than 70% of their investment points in the energy sector and the financial sector. Both are highly concentrated and key sectors for the Czech economy. As the HCC's founder stated, HCC "favored investments that had a predominant position in the market due to their role in the former command economy." (Schuette, 2000)

The banking and energy sectors are highly concentrated sectors. At the time of voucher privatization they had high market shares and were in very good condition. Considering their positions as monopolies and oligopolies, they were comparatively safe investments in industries with guaranteed returns. These are industries immune to market risks, such as changing consumer preferences or enhanced competition from other firms in the industry. Uncertainties are linked to political risk such as lack of knowledge about future regulatory environment. The biggest electricity producer in the country – CEZ (Czech Power Company) is running the country's largest existing nuclear power plant and has a leading part in the new plant in Temelin in South Bohemia. The liabilities

resulting from two such gigantic projects are difficult to assess and bear by any outsider. The major IPFs are in a better position to take the risk related to significant investments. In the words of Schuette, “from a long-term perspective, substantial holdings in the energy sector may be a good base to acquire control over the companies with a dominant market position in the future when the state will withdraw from the industry.” (Schuette, 2000)

In addition, it is obvious that HCC’s goal in voucher privatization was control over significant enterprises. The fund ended up owning a significant stake in 86% of its companies and a controlling stake in 65% of its companies (Egerer, 1995).

In efficient Western equity markets under-priced shares are rare since share prices reflect all public information on future earnings of an enterprise. In contrast, in a privatization process there is much more potential to pick undervalued companies since information is scarce and costly. IPFs had a higher probability of choosing undervalued enterprises than individuals. Choosing cheap and undervalued shares (shares with a high turnaround potential), required more information on companies than was publicly available, which explains the emergence of IPFs. Since HCC had some information concerning the likelihood of success of enterprises, they were definitely at an advantage over the original voucher holders, who were operating under conditions of uncertainty (Sowell).

## **VI. Conclusions and Policy Implications**

The creation of investment privatization funds can be regarded as an institutional arrangement that emerged in an economy of increasing uncertainty. Individuals sold their vouchers to these funds because they could not accurately assess the risk of alternative uses of the vouchers. They quickly took the certain price offered by IPFs and exited the game for good. Domestic-bank sponsored funds were an arrangement that reduced both the cost of monitoring and the economic risks associated with bank lending. On the other hand, funds established by individuals were entrepreneurial and aimed at control over enterprises and the potential profits from a concentration of ownership. The establishment of IPFs is a logical and natural development, given an information asymmetry between the original voucher holders and the IPFs.

There are certain implications concerning future policy and the role of international institutions, such as the World Bank, the International Monetary Fund and the European Bank for Reconstruction and Development, who are involved with assisting the transition to a market economy. A lot of the activity of these institutions focuses on planning out privatization and financial assistance to the transitioning countries. While financial assistance in the forms of loans helps, it seems that more help with establishing the appropriate institutional and legal framework for a successful transition would be useful. This is one implication that is relevant for most of the countries in transition in Eastern and Central Europe.

In the words of Vaclav Klaus, the economist and politician largely responsible for the Czech economic transformation, "The speed... was regarded as absolutely essential"

(Mejstrik, 1997). Looking at how voucher privatisation happened in practice, the time frame for conducting the two waves of privatisation was only 2-3 years, which indicates an admirably fast sale of the property. However, the negative consequences from the "shock therapy" approach are also obvious. Insufficient legal and financial frameworks for the conduct of privatisation account to a big part for the information gap created and thus, for the establishment of IPFs. It has become clear by now that IPFs were a phenomenon which distorted the ideas and expectations of voucher privatisation. This could have been prevented had more time been taken in the establishment of legal and financial institutions. The IPF phenomenon could have been predicted had enough thought been given to possible scenarios of the process of voucher privatisation. This was not the case, and proper legislation for IPFs was not created, so they were able to function as limited companies for some time. Clearly, speed had its advantages but a more deliberate approach would have led to better outcomes.

Even the World Bank now recognises in a number of its publications that a slower approach would have been a better idea. The following quote from the World Bank Finance and Private Sector Development Department Report illustrates this:

Would countries that went through mass voucher schemes, with disappointing results, have been better off keeping their enterprises in state hands while trying to accelerate economic reform and creating an institutional and legal framework to attract reputable concentrated investors?... The concentration of ownership in many voucher privatization programs, as in the Czech Republic, owed much to poor capital market regulation and weak rule enforcement. But if the authorities had been willing and able to enforce an adequate regulatory framework, they probably would have been forced to accept a longer period of diffuse ownership. (Eggerer, 1998)

Because privatization was conducted too fast, the IPFs had the absolute advantage in the process because of their size and access to information. This put Czech citizens

wanting to invest on their own in an unfair and unprotected position. It is not surprising that under these conditions they opted for the certain profit of the sure price offered by IPFs over the uncertainty of continuing to hold their vouchers. If free market legal and financial institutions had been in place, individual investors would have been better protected and less likely to hand their vouchers over to the IPFs.

These factors indicate a certain questionability of the social fairness of the process, which puts the Government and the transformation as a whole in a doubtful position in people's eyes. It is logical that a distrust of the Government's abilities to cope with the situation would occur after a phenomenon such as the IPFs. Even today many Czech citizens feel discouraged from investing on their own. The reason for this is the feeling among the population of the unfair position they were put in during voucher privatisation. This points towards taking specific measures to protect the individual investor in developing economies, and, specifically, the results of this study suggest making the necessary information available to individual investors. When insiders and institutions have a definite information advantage individual investors are discouraged.

Useful areas for future research would be the institutional and legal arrangements that need to take place before rapid privatization in order to prevent the resulting concentration of ownership and control. The appropriate role of international institution in the economic transition should also be explored.

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## **Appendix A**

### **Description of the Voucher Privatization Process**

The companies, or parts of them, that were to be privatised by the voucher method, were transferred into private ownership according to the following procedure.

Round '0' (1991 – 1992): Investment coupons are distributed, i.e. each citizen can buy a book of vouchers with 1000 investment points. The books cost 1000 CZK, which is about one fifth of the average monthly wage in the Czech Republic. This fee covers only administrative costs and the costs of the networking system used during the bidding process. The voucher book has no nominal value.

In addition, in this round the holders of investment coupons can transfer investment points to Investment Privatization Funds in return for cash.

Investment Privatization Funds were established in the preparatory round of voucher privatization as limited companies organised mainly by banks, insurance companies, consultant firms and other private companies and people. The only condition for their establishment was possession of equity capital in the amount of 1 million or more CZK, since separate legislation for them was not available and they registered as limited responsibility companies. They functioned as issuers of shares of stock against the reception of investment vouchers and subsequently used these vouchers to purchase shares in SOE's<sup>4</sup>.

Round 1(1992-1993): The prices of shares of all companies are uniform and determined by the price setting agency. In the first wave the price was 100

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<sup>4</sup> For more information on the establishment of IPFs see <http://www.cerge.cuni.cz/cerge-ei/publicat/Books/book97.htm>, Center of Economic Research at Charles University, 1997



investment points for 3 shares and in the second wave - 100 investment points for 2 shares. Each share represented the same book value, which was around 1200 KCS for both waves.

Round 2 (1993): There are several possible developments depending on the supply-demand ratio for shares of each company.

a) If the demand and supply are equal, all orders from round 1 are met fully and the voucher privatization of the company stops, since there are no more shares to be sold.

b) If the supply for shares is bigger than the demand for them in the first wave, existing orders are met fully. The remaining shares of the company are offered in the third round at a lower price.

c) If the supply of shares is smaller than the demand and the difference between the supplied amount of shares and the demanded amount of shares is less than 25% of the amount supplied, all orders are met in lower amounts. The voucher privatization of the company has finished since there are no unsold shares.

d) If the supply of shares is smaller than the demand and the difference between the supplied amount of shares and the demanded amount of shares is more than 25% of the amount supplied, none of the orders are met. All available shares of the company are offered in the next round of privatization at a higher price.

The rounds continue until all available shares from participating companies have been sold.

A review of the process of Czech voucher privatization is also provided by Jan Hanousek and Randall K. Filer (Hanousek, 1999).