Abstract

This study compares the stock market reaction to announcements of information technology in Poland, an emerging and transition economy, with the USA, a mature developed economy. Based on the results, there appears to be a significant difference in stock market reaction. Overall, the stock market reactions to the announcements of information technology are more favorable for companies located in Poland. In this context, investors react especially positive when Polish service companies announce IT investments. The results of this study are particularly important for economies in the catch-up process.

1. Introduction

Event studies are gaining popularity within the Information Systems (IS) research. For instance, a systematic review conducted in Fall of 2008 identified 46 event studies related to the IS field [1].

In essence, event studies examine the relevance of various corporate happenings to stock prices and market valuation [2]. The corporate happenings, or events, may include corporate refocusing, senior level turnovers, layoffs, product recalls, or strategic investment decisions [3]. In the IS research, event studies, in particular, examine the relevance of information technology (IT) investment announcements on companies' market value [1]. The efficient market theory provides foundation for event studies [4], and assumes that significant corporate happenings have an effect on the stock prices and their relevance is incorporated in the market valuation quickly.

The majority of the event studies related to IS research was conducted by using the data from the US stock market. In contrast, not many studies focused on the fast growing stock markets located in emerging or transition economies. Thus, only a few studies about the stock market reaction to IT investments in emerging economies exists. For example, in a study conducted by Meng et al. [5] the stock market reactions to IT investments in China versus the USA were compared; while Dobija et al. investigated stock market reaction to IT investments conducted in Poland [6].

The results of these studies, that focused on stock market reactions in markets other than the US stock markets, suggest that stock markets may react differently when companies in emerging or transition economies announce IT investments.

The scarcity of the research examining the relationship between IT investments announcements and the market value of companies located in emerging economies and the presence of potential differences reported by these few existing publications provide motivation for our study. The special focus of the investigation presented in this paper are transition economies, or countries, that are in transition from a communist style planned economy to a free market system [7].

In summary, the main research question for this research project is if stock markets react differently to IT investments in transition economies as compared to mature, developed economies.

The remainder of the paper is structured as follows. In the next section, we discuss the background and motivation for our research. Then, we introduce four hypotheses guiding our research. After the methodology section, we discuss the results of our analysis. The discussion section leads to some ideas for future research. The paper concludes with summarizing the contributions.

2. Background and Motivation

2.1 Transition Economies

As mentioned before, transition economies are defined as economies that are in long-term transition from a communist style central planning system to
market economy [8]. Overall, this long-term transition process in these economies could be divided in four major phases as depicted in Table 1.

### Table 1. Transition Phases

<table>
<thead>
<tr>
<th>Phase</th>
<th>Business Environment Characteristic</th>
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</thead>
<tbody>
<tr>
<td>Early Transition</td>
<td>Prevalence of large state-owned enterprises; emergence of small businesses; rudimentary adoption of market economy; stagnant or declining standards of living.</td>
</tr>
<tr>
<td>Westernization</td>
<td>Many formerly state-owned enterprises now privatized or taken over by foreign companies; Western management style adopted; many small businesses consolidated; more advanced adoption of market economy; high dependency on know-how and technology transfer from developed countries; still relatively low but fast increasing standards of living.</td>
</tr>
<tr>
<td>Realization</td>
<td>Although financially sound, many large, local companies still have difficulties to globally brand their products; difficulties in attracting and retaining headquarters of global players; although Western management style is widely adopted, overall productivity still lags behind; increasing realization that new business models and policies are needed to truly catch up with the living standards in developed countries.</td>
</tr>
<tr>
<td>Closing the Gap</td>
<td>The more affluent and politically better established countries are increasingly able to attract not only foreign investors but also become attractive locations for headquarters of global players; high profit margin products increasingly represented in exports; increasing royalties from knowledge products and income from patents; increasing creation of competitive global brands by creating new business models and policies.</td>
</tr>
</tbody>
</table>

As the transition process is very unique for every country, the time of reaching a certain stage also varies by country. Currently, the majority of transition economies could be assigned to the second (Westernization) or the third (Realization) phase. In addition, as it could be seen in Table 1, most of the transition economies did not fully complete the transition process and were able to close the economic gap to mature, developed economies.

Although the transition process in many transition economies began two decades ago substantial differences, as compared to fully developed market economies, do exist [9]. For example, the living standards in most transition economies are still modest and highly paid jobs are scarce. Perhaps the most evident difference can be viewed in the directions of know-how and capital transfer. In essence, a large portion of commercial knowledge products is almost exclusively created in developed countries and exported to transition economies. In a very similar way, companies from developed countries are more likely to invest in transition economies, while investments in developed mature markets conducted by companies with headquarters in transition economies are still exceptions.

Moreover, as it could be gleaned from Table 1, various phases of the transition process dictate various usage of IT. The use of IT by phases is depicted in Table 2.

### Table 2. Information Technology Use

<table>
<thead>
<tr>
<th>Transition Phase</th>
<th>Information Technology Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early Transition</td>
<td>Access to new IT after lifting of CoCom embargo; large, state-owned enterprises implement computer systems to support profit planning; IT adopted by new, small businesses; failure of many IT projects to deliver expected results.</td>
</tr>
<tr>
<td>Westernization</td>
<td>Many privatized; formerly state-owned companies acquire advanced enterprise systems; many small, local businesses offering IT consulting services; IT customers now better educated and more demanding; IT offered through large, global players perceived to be superior quality; western style project management practices adopted, however, many IT projects require more dedication of resources.</td>
</tr>
<tr>
<td>Realization</td>
<td>Recognition of IT as an essential tool for global expansion; realization that new approaches are needed to support new business models, and that even the most advanced technology by itself will not enable companies to fully catch up with incumbents from developed countries; development of new tools for IT project management.</td>
</tr>
<tr>
<td>Closing the Gap</td>
<td>Increasing use of IT to create knowledge products; increasing strategic use of IT.</td>
</tr>
</tbody>
</table>

Overall, various phases of transformation and the connected use of IT may substantially affect the investors’ perception about investments in IT.

### 2.2 Event Studies in Transition Economies

As mentioned earlier in this paper, the number of event studies focusing on stock market reaction to IT investments in emerging economies, in particular transition economies, is limited. To this extent one study examined the effects of e-Business initiatives in Korea, an emerging economy, on stock prices [10] and reported positive reactions. The overall positive stock market reactions to e-commerce initiatives in emerging economies was confirmed by a different study focusing on Taiwan [11] which also could be considered as emerging economy. A comparative event study searched for differences in stock market reactions in China and the USA confirmed many substantial differences across these economies [5]. Moreover, potential differences in stock market reactions were validated based on a study focusing on Poland, a transition economy [6].
2.3 Resource-based View

According to the resource-based view (RBV), the competitiveness of the firms is highly dependent on the resources it possess [12]. These resources could be classified as physical capital resources, human capital resources, and organizational resources [12]. The possession of attractive resources usually leads to higher profitability and stronger position of the company in the market place [13]. The most valuable, attractive resources are not easily replicable and cannot be simply transferred from one firm to another and must be built over a long-term process. One of the physical capital resources that is created in a long-term process and series of investments is the corporate IT.

3. Research Hypothesis

Using the RBV as the theoretical foundation for our research hypothesis, it could be speculated that stock market reaction to IT investments in Poland would be fully different from these reported in developed countries. In essence, the companies in Poland are still in the process of building their resources, while many of the IT investments are first time investments. In contrast, many of the IT investments in the USA are replacements of the existing systems. Replacements of the existing systems are also strengthening the resource base, but their effects on the bottom line are modest. Thus, building on the RBV and resource accumulation theory [14], we hypothesize:

H1: The stock market will react more positively to IT investment announcements conducted in Poland, as compared with similar investments conducted in the USA.

Event studies, using data from the USA, report a stronger reaction to the IT investments conducted by small companies. In contrast, stock market reaction to such investments for large companies is minimal. One explanation could be that smaller firms are more affected, positively or negatively, by IT investments. In Poland, however, by using RBV as an explanation quite different outcome could be expected. After the privatization and restructuring, many large companies in Poland are in better position than smaller firms to use IT for their competitive advantage. Thus, we hypothesize:

H2: The stock market will react more positively to IT investment announcements conducted in large companies located in Poland, as compared with similar investments conducted in large companies located in the USA.

H3: The stock market will react more positively to IT investment announcements conducted in manufacturing companies located in Poland, as compared with similar investments conducted in manufacturing companies located in the USA.

H4: The stock market will react more positively to IT investment announcements conducted in service companies located in Poland, as compared with similar investments conducted in service companies located in the USA.

4. Methodology

As the research methodology, we applied the standard event study approach [3] [15]. Consequently, we started our investigation by collecting announcements about the IT investments. Several databases, including Lexis-Nexis and Emerging Markets Information Service were searched for suitable announcements. To be included in the final sample, the announcements had to satisfy several criteria. First, the announcement had to entail IT investments conducted by a public company traded at the stock exchange. Second, the security data around the announcement had to be available. Third, no other important information about the particular company had to be released along with the IT investment announcement.

In total, we were able to collect 90 usable announcements about IT investments in Poland and 107 usable announcements about IT investments in the USA.

To test the first hypothesis, the full sample was used. To test hypotheses H2 to H4, we partitioned the sample in several sub-samples.

In the following analysis, stock market reaction was assessed using cumulative abnormal returns (CAR). For our study, we decided to use market adjusted abnormal return calculation method [16]. Moreover, we decided, as most the event studies in IS research, use relatively short (-1,1) event window. This three-day event window includes the day before the announcement (day -1), the day of announcement (day 0), and the day after announcement (day 1). For more explanation about the analysis, please refer to [17].
5. Results

As mentioned in the earlier section, we calculated abnormal returns, CAR, for different samples and sub-samples using a three-day event window. The results of the analysis are summarized in Table 3.

Table 3. Results of the analysis for the (-1,1) event window

<table>
<thead>
<tr>
<th>Sample/Subsample</th>
<th>Poland</th>
<th>USA</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>CAR</td>
<td>N</td>
</tr>
<tr>
<td>Full Sample</td>
<td>90</td>
<td>0.005</td>
<td>107</td>
</tr>
<tr>
<td>Breakdown</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Large</td>
<td>42</td>
<td>0.010</td>
<td>88</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>34</td>
<td>0.003</td>
<td>58</td>
</tr>
<tr>
<td>Service</td>
<td>56</td>
<td>0.005</td>
<td>49</td>
</tr>
</tbody>
</table>

* Significant at 10 percent  **Significant at 5 percent  *** Significant at 1 percent

As it could be seen from Table 3, three out of four hypotheses are supported. H3 was not supported.

For the full sample, it seems that for companies in Poland stock markets tend to react positively when announcements about IT investments are released. In contrast, for companies located in the USA, the reaction is negative. The difference between the two countries is statistically significant. This indicates that, in contrast to the USA, investments in IT conducted by Polish are positively received.

Regarding the company size effect, it seems that for large companies in Poland the stock market is positive. In addition, the magnitude of positive reaction appears to increase with the company size.

6. Discussion

Our results uncover several important implications. Most importantly, it confirms that stock market reactions to IT investments in transition economies, such as Poland, may be different as compared to the mature markets, such as the USA. These finding are consistent with the results reported by Meng and Lee [5], who compared stock market reactions to IT investments in China, a transition economy, with the stock reaction in the USA. They reported that IT investments announcements increase companies market value in China but not in the USA.

Thus, the results of our study confirm the need for further internationalization of the event studies in the IS research as formulated by Roztocki and Weistroffer [1]. A special attention needs to be directed to the emerging economies which are in the catch-up process.

7. Limitations and Future Research

Our study presented in this paper is subject to some limitations. We compared the stock market reaction to the IT investments announcements in only two stock markets: Poland and the USA. A study from a greater number of different markets would benefit this kind of research. In addition, in our study we included only three major explanatory variables: location (Poland vs. the USA), company size (large vs small companies), and industry (manufacturing and service sectors).
Apparently, a greater number of explanatory variables would benefit this stream of research.

The limitations of our study provide ideas and opportunities for future research projects. For example, one study may expand the investigation to more stock markets, while other future research projects may look at more explanatory variables.

8. Contributions and Conclusions

We believe that our paper makes several important contributions to the existing body of knowledge.

9. References