
Tomáš Najbrt¹, Kamila Hasilová²

¹  Department of Wood Processing, Faculty of Forestry and Wood Technology, Mendel University in Brno, Zemědělská 1, 613 00 Brno, Czech Republic
²  Department of Econometrics, Faculty of Military Leadership, University of Defence, Kounicova 65, 662 10 Brno, Czech Republic

Abstract


This paper is focused on furniture firms in the Czech Republic during the period 2005–2012, which covers the year of the crisis. The aim was to assess the given economic situation of the manufacturing businesses comparing some of the economic indicators such as tangible fixed assets, revenue from own production and services, pre-tax profit and labor costs. The study was conducted in the Czech Republic using the data provided by the Czech Statistical Office. Results for the specified period and selected groups of micro furniture companies are shown; dependence of economic indicators within the given time period is also analyzed. The analysis has shown that the smallest of the firms were least affected by the economic crisis; moreover, the medium-sized of the companies exhibit tangible assets growth and certain degree of inertia in years 2008 and 2009. Finally, possibilities how the micro furniture companies could proceed when purchasing new technologies are outlined.

Keywords: furniture company, tangible assets, machinery obsolescence, investments

INTRODUCTION

The period 2005–2012 is characterized as a critical one for all manufacturing companies. Before this period, the Czech economy as a whole was slightly growing (MFČR, 2005). On May 1, 2004, the Czech Republic became a member of the European Union. Full membership affected the Czech economy; in particular, the international trade intensified. Positive impact on the Czech economy performance was affected indirectly, later on directly, namely in 2008 – the year of the crisis. Since then, uncertainty about future economic growth had been gradually rising. In such an environment businesses faced high degree of uncertainty (ČNB, 2008). Nevertheless, slight economic recovery was observed at the end of 2010 (MFČR, 2010). According to (MFČR, 2013), the Czech economy remained in a shallow recession. The economy should get back to the growing trend, although the growth might be very gradual.

Small businesses are usually described in terms of SMEs – small and medium-sized enterprises – from their increasing evidence in 1990s (Ang, 1991; Carlsson, 1992) and furniture companies are no exception. The firms are studied either in a large scale, see e.g. Scott (2006), Špačková and Žufan (2012), or they are observed in a specific country, for example see papers by Amoah and Fordjour (2012), Pirc Barčić and Motík (2013) or Karagouni and Protogerou (2013), who examined furniture SMEs in Ghana, Croatia and Greece respectively. They used the standard size division of companies according to the European Commission recommendation (2003); however, such classification is not suitable for the small Czech furniture companies.
We primarily concentrate on machinery and equipment obsolescence and their net book value for their eventual sale in different stages of their wear. Evaluation of tangible assets is assessed on the basis of its obsolescence. From the economic point of view, tax depreciation of tangible assets covers the wear and tear on machinery and equipment (Act No. 586/1992 Coll.). On the other hand, given tax depreciation methods seem to be less appropriate from the practical point of view. Due to a rapid development of technology, particularly computer technology, the machinery become obsolete, although, at the same time, it is not yet economically depreciated in all their value. Business loan or bank credit could provide a source of funding of new technology; however, the repayment period is usually longer than the tax depreciation. How can such a situation be dealt with? A company, under market pressure, has to provide its products in the requested quality and mainly in the desired quantity. One of the possibilities of stabilizing state is an acquiring new technology.

MATERIAL AND METHODS

Let us take a closer look at purchasing new machinery and equipment. One part of money needed for buying the new technology is borrowed in a form of a bank loan, which has to be repaid following a repayment schedule. Another part of the money needed for the purchase of the new technology can be obtain indirectly using the income tax savings via the tax depreciation during lifetime of the individual years of depreciated assets (Valach, 2006). Tax depreciation in furniture industry is specified by the Act No. 586/1996 Coll., and it takes five years for technology to be depreciated. Nevertheless, the newly bought machine will become obsolete in shorter time.

Example

If we want to buy a CNC machine, we find out that according to the Czech legislation on taxes the machine belongs to the second depreciating group in compliance with Appendix 1 of Act No. 586/1992 Coll. A depreciating period is defined for a minimum period of five years. On the other hand, the machine becomes obsolete in much shorter time; usually it takes several months, but not years. Thus, the obsolescence time is shorter than the depreciation time as well as the time given in a repayment schedule in the case of a bank loan. We can see that the obsolescence is not taken into account in the depreciation process.

This particular situation can be solved, for example, by using an operating lease. The term of the operating lease is usually shorter than the economic life of the machine. From this point of view, we can talk about a good opportunity to fund our new piece of technology. Though, the operating lease of woodworking machines is not common in the Czech Republic. If one wanted furniture companies to use the operating lease on a larger scale, the optimal time period of the operating lease would have to be specified. It should be based on the knowledge of technology and economics of furniture companies in the Czech Republic. In order to clarify this problem we collected available information on furniture companies according to Classification of Economic Activities (CZ–NACE, 2008).

We started having a list of 135 furniture firms provided by the Czech Statistical Office (2013) and the year 2012 was selected as a reference year. In that year, 14936 companies were registered. The listed firms constituted 0.9% of all furniture companies; nevertheless, their total turnover amounted to almost 58%. We completed firms’ data using the Public Register and Collection of documents (MSČR, 2014). Namely profit and loss statements [P & L] and balance sheets [BS] of the respective companies were used. However, 24% of firms did not provide complete data, 16% changed their status during the studied period (i.e., they were established or they were closed down), 7% of firms did not work in the furniture industry, and 5% of firms were actually natural persons (without duty to provide such information at eJustice). Since the Czech Republic is a member of the European Union, we could use the division of the firms according to the European Commission recommendation (2003). Nevertheless, there are a small number of medium firms in the Czech Republic. Therefore, we focused on the so-called micro firms, which we divided into three groups for the subsequent analysis. We set different separating points according to annual revenue from sales of own products and services in 2008 – namely four million of USD and eight million of USD. The separating points were selected in order to have groups with normally distributed data – this assumption is needed in the regression analysis (Likeš and Machek, 1983). Also, this partition can better characterized structure of the Czech furniture companies, which is closely related to the size of the Czech Republic.

We selected four assessing criteria, in particular, revenue from sales of own products and services (P & L, line n. 05), tangible asset (BS; item B.II), pre-tax profit (P & L, line n. 60), and salaries (P & L, line n. 13). We created three groups according to firms’ revenues. The groups are as follows: Group A with revenue over eight million USD of the size 18, group B with revenue between four and eight million of USD of the size 27, and group C with revenue less than four million USD of the size 19. We computed coefficients of regression lines to estimate trend for each group and each assessing criterion and compared the tendencies across the years and groups. Using the t-statistics, we tested whether slopes of the trend lines are significantly different from zero.
RESULTS AND DISCUSSION

First, we sketch 95% confidence intervals to assess heterogeneity across the years for the firms’ revenue. From the first glance, group A appears to show different behavior than the other two groups. We can see (Fig. 1) that group A suffers from large variability, groups B and C, on the other hand, seem to be more homogeneous during that time period.

Fig. 2 illustrates mean values of own product sales and trend lines for all groups. Here, the indicator has resulted in an unusual way during the crisis period. For groups A and C a drop in revenues occurred in 2006. A fall for groups A and B took place in 2009, which means the small Czech furniture companies were affected with a year delay. In the next year, 2010, there was a drop in revenue for group C. Group A gradually increased volume of its sales since 2009. Each group has its own specific problems as it can be visible from the graph in Fig. 1. In other words, it seems that firms from group B and C make their revenue more easily than companies from group A in the critical period. It is known that it is easier to enter small-scale contracts; this fact is supported by the small variability in the revenue indicator for groups B and C, where a large drop in revenues is not present.

1: Mean revenue from sales of own products and services for each group during the time period with 95% confidence intervals for each year

2: Mean values of revenue from sales of own products and services and trend lines for groups A, B, and C
Overall trend in revenues is statistically significant only for groups B and C at five percent significance level. Results for the regression slope test are summarized in Tab. I.

If we focus on the pre-tax profit, we can see that there was a distinct fall for all groups, see Fig. 3. However, groups A and B registered the fall in 2009, and the pre-tax profit of group C dropped already in 2008. Since 2010, there was some instability in ensuring contracts with a higher share of profits, which can be seen as another drop in profits in 2012. We can conclude that the overall situation has worsened since 2011. However, all trend lines have insignificant slopes with \( p \)-values equal to 0.1248 for group A, 0.2030 for group B, and 0.3926 for group C. Although the pre-tax profit is decreasing, the revenues from own product sales and services are slightly rising (groups A and C). Firms cope with

<table>
<thead>
<tr>
<th>Group</th>
<th>Slope</th>
<th>( t )-statistic</th>
<th>( p )-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>0.3118</td>
<td>0.7858</td>
<td>0.4333</td>
</tr>
<tr>
<td>B</td>
<td>−0.1217</td>
<td>−2.0500</td>
<td>0.0416</td>
</tr>
<tr>
<td>C</td>
<td>0.1410</td>
<td>2.6829</td>
<td>0.0081</td>
</tr>
</tbody>
</table>

If we focus on the pre-tax profit, we can see that there was a distinct fall for all groups, see Fig. 3. However, groups A and B registered the fall in 2009, and the pre-tax profit of group C dropped already in 2008. Since 2010, there was some instability in ensuring contracts with a higher share of profits, which can be seen as another drop in profits in 2012. We can conclude that the overall situation has worsened since 2011. However, all trend lines have insignificant slopes with \( p \)-values equal to 0.1248 for group A, 0.2030 for group B, and 0.3926 for group C. Although the pre-tax profit is decreasing, the revenues from own product sales and services are slightly rising (groups A and C). Firms cope with

3: Mean values of pre-tax profit and trend lines for groups A, B, and C

4: Mean values of salaries and trend lines for groups A, B, and C
their market position by accepting contracts with a lower percentage of profit.

Considering salaries, displayed in Fig. 4, we can spot similar behavior for all groups. Salaries were growing until 2008 with a fall in 2009, which reminds the development of the revenues during the considered period of time. Companies from the third group (C) experienced slight linear growth in salaries—the slope of the trend line is significantly different from zero ($p$-value equals to 0.0170). For group A, development of salaries during the time period is similar to the development of revenues. We could interpret such behavior as sort of social conscience of firms’ owners with their employees.

![Tangible assets trend lines](image)

**Fig. 5** presents values of tangible assets; there is a peculiar situation. All monitored groups exhibit more or less similar trend lines during the period of time. However, the trend line of group A is steeper than the lines of the other groups. The firms with revenues higher than eight million of USD per one tax period use a long-term planning system. Larger investments also mean longer delivery periods, which explain certain degree of inertia in years 2008 and 2009 before the financial crisis showed itself. Companies with lower annual revenues apply a long-term planning cycle less and this cycle is reduced with regard to the amount of their revenues. Minor changes in small investments do not affect the overall assessment as they do in larger investments.

![Revenue, salaries, tangible assets, and pre-tax profit](image)

**Fig. 6**: Revenue, salaries, tangible assets, and pre-tax profit for group A
Taking a closer look at the graph in Fig. 5, we can see that companies from group A invested larger amounts of money into tangible assets in 2009; it is a good strategy from a long-term point of view. Companies created high-quality technical options for subsequent years, which should bring them higher profit in the future.

According to graph of tangible asset in Fig. 5, we can conclude that infinite enlarging of the asset volume is not possible. There is partial volume stagnation of assets in the last two years. Therefore, it is essential that firms manage the tangible assets according to different rules. As mentioned before, machines become obsolete earlier than the tax depreciation according to Act No. 586/1992 Coll. is complete. Therefore, it is important to deal with the time period after which it would be optimal to sell the machine and buy a new one.

If we take a closer look at particular groups (see Figs. 6–8), we find out certain degree of similarity in the shape of the behavior of the assessment criteria. Each group has, of course, its own specific problems, which cannot be generalized to the whole furniture industry. Group B seems to be the most stable one. Its curves do not suffer from major fluctuations. A fall in pre-tax profit of group C occurred a year earlier than in profit of groups A and B. We can also spot that there was a drop in pre-tax profit in all groups in years 2011 and 2012. However, values of revenues and salaries were rising. This suggests the need for increasing the share of contracts with higher added value in further years, in order to improve
the manufacturing process, thereby increasing productivity. Purchasing new technology can move all the groups in creation of profit to interesting numbers when compared to the previous year.

**Proposition**

Now, other ways of managing the tangible asset can be considered. Machinery and equipment in furniture companies become obsolete quite fast. Companies should consider renewal of their technology. If acted promptly they could even consider the possibility of reselling partially used machinery. A machine in a good condition could still serve a purpose to another company that has not sufficient funds to buy a new technology. Co-financing opportunities of new technology by saving income taxes using tax depreciation has to be based on the condition that the company will show a certain amount of profit in the tax year to be able to get that amount.

Each of the groups has its market position, which they have to ensure according to their technical and financial capabilities. Companies can use funds obtained from the sale of the technology to purchase the new one; costs of the purchase can be divided into several various sources. The first source is the resale of the used machinery and equipment. The income tax savings using the tax depreciation during lifetime of the particular years of depreciated assets could be included in the second source. Bank loans could constitute another source, among others, of funds for the purchase of the new technology. Using such a scenario a company would not have to apply for such a big bank loan. Consequently, the company would not be burdened with high repayments arising from the loan. This concept can remind modified version of the so called Just-In-Time method (Humphrey, 1995).

From the above analysis one can conclude that it is necessary to deal with a time period of machinery and equipment obsolescence. Therefore, there is a need for a quicker replacement of tangible assets that will be beneficial for the production improvement in all groups of enterprises. The necessity of more rapid renewal of the tangible assets is more important, the more dominant market position the company has. The multi-source funding can speed up the replacement of the technology and, therefore, it can keep production still in competitive state. In such a quick renewal of technology and equipment, we can talk about a competitive advantage over other companies. Maintaining and improving a market position is one of the primary tasks of any business entity.

**CONCLUSION**

This paper has analyzed furniture firms in the Czech Republic, namely their tangible fixed asset, which is affected by the machinery and equipment obsolescence. From the analysis can be concluded that the companies did not experience a large drop in manufacturing in the period within years 2008 and 2009 – the years of the financial crisis. A fall occurred only for larger companies (group A), which are dependent on the volume of contracts. It also follows from the evaluation that the larger firms were able to increase the value of tangible assets during the critical period (see Fig. 5). The values of the pre-tax profit showed that they are not related to the increasing of the tangible assets (Figs. 3 and 5).

In the overall assessment why to deal with machinery and equipment obsolescence we come to the issue of today’s business concept as a whole. Nowadays clients approach business negotiation in a different way. Due to development of information technology clients usually look up information before they attend a business meeting. They try to come to the business appointment ready having specific requirements regarding the purchase of new machinery and equipment. On the other hand, production companies should react quickly to the development of new technologies. For example, missing the proper times to purchase new technology can cause complications to maintaining a firm’s position in the furniture market. As it is apparent from the graph of the tangible assets (Fig. 5), firms from groups B and C should think over buying new technology to be able to move to a higher category, and thus ensure better economic results for their business.

The area of small furniture companies in the Czech Republic will require further research and new solutions. One of the subsequent tasks is to develop methodology for determining the optimal time period after which the used technology should be sold. Then, this methodology could be helpful in negotiations with a bank considering the length of an operating lease, which could assist in acquiring new technologies.

**Acknowledgement**

We thank the referees for their insightful comments that led to considerable improvement of our paper. The research has been partially supported by the University of Defence through the Institutional development project Economic Laboratory.
REFERENCES