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COMPARISON OF FOUNDRY INDUSTRY IN SLOVAKIA AND HUNGARY

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Abstract

Foundry industry is an important supplier of complex shape parts for other industrial branches. It depends on the development of customer demand in other industries. The following paper compares the structure and sales of foundry industry in Slovakia and Hungary.

Key words

Foundry, casting, ferrous metals, non-ferrous metals

INTRODUCTION

Foundries supply to all sectors of the modern industrial world, including the automotive and general engineering, agriculture machines, building and construction, electrical engineering, medical engineering, ship building, aerospace industry, energy and renewable energy, railway engineering, art, mining and steel industry. In fact, all aspects of modern life are dependent upon castings, from brake discs to medical implants, from marine engines to aircraft turbine blades.

The automotive segment accounts for major share of the market owing to the wide range of applications in automobiles. It is followed by sanitary and pipes and fittings segments [1].

According to data [2], the European foundry industry has approximately 4,700 metal casting facilities employing approximately 290,000 workers and producing castings in the value of 43 billion Eur.

Foundry industries in various countries have various production capacities and employ various number of workers. This paper tries to compare the structure and sales of the foundry industry in Slovakia and Hungary with the aim to reveal their similarities and differences.

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According to [3], in 2015, the foundry industry in Slovakia produced 95,204 tons of castings (46,644 tons of ferrous metals castings in 16 foundries and 48,560 tons of non-ferrous metals castings in 34 foundries).

According to [4], in Hungary in 2019, roughly 200,166 tons of castings were produced (76,197 tons ferrous castings and 123,969 tons non-ferrous castings). The total tonnage was almost by 13 % less than in the previous year. According to [5], in 2015, the foundry industry in Hungary produced 204,491 tons of castings in 114 foundries.

The foundry industry in Slovakia is represented by approximately 38 foundries. The foundry industry in Hungary is represented by approximately 95 foundries. Some small foundries were not included because of lacking data.

The information about the moulds and casting techniques used in various foundries and about the metals cast in various foundries were compiled from their websites. The information about their revenues were compiled from websites [6, 7].

Figure 1 shows percentage distribution of revenues of foundries in Slovakia in 2019. The data concern 36 foundries. The revenues of two foundries were unavailable; their usual yearly revenue was up to 1 million Eur.

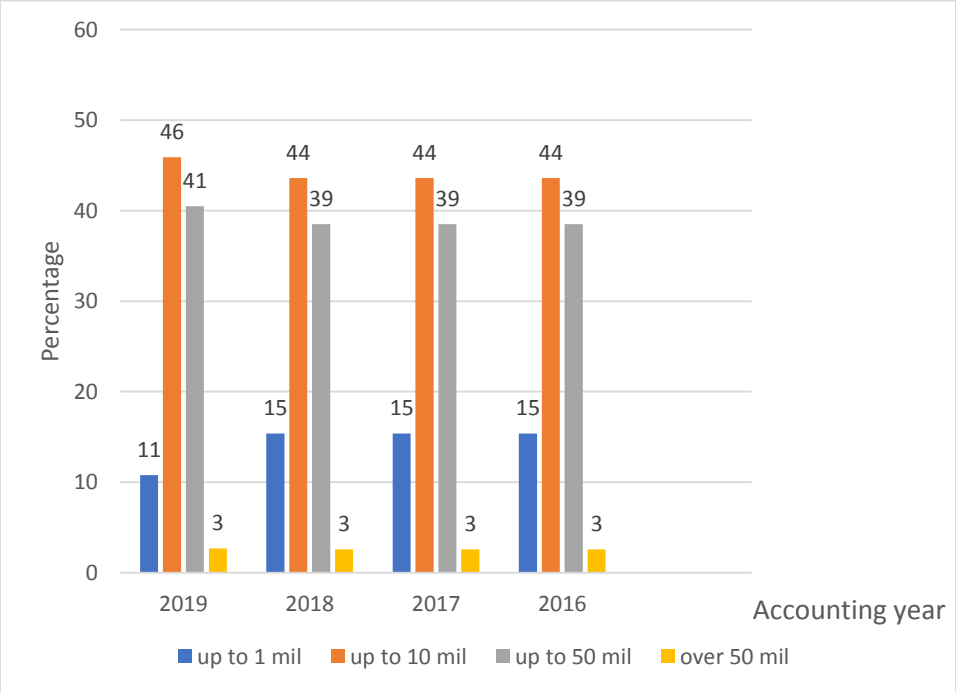

Figure 1 *Percentage distribution of revenues of foundries in Slovakia*

Figure 2 shows percentage distribution of revenues of foundries in Hungary in 2019. The data are presented for 68 foundries. Many foundries did not submit their revenues in registry for last year. The revenues of those 20 foundries were 1.136 billion Eur in 2018 (usually around 0.100 billion Eur in the previous years).

Figure 3 shows comparison of average revenues of foundries in Slovakia and Hungary.

Figure 4 shows percentage distribution of casting techniques used in 95 foundries in Hungary and in 38 foundries in Slovakia. The total summary is more than 100 percent in both cases, because many foundries use more than one casting technique.

Figure 5 shows percentage distribution of foundries in Hungary and in Slovakia, casting various metals and alloys. The total summary is more than 100 percent in both cases, because many foundries use more than one type of alloy. Some of these foundries use even four alloy types.

Figure 6 shows percentage distribution of foundries using various moulds and dies in Slovakia and Hungary. In Hungary, 11 foundries use ceramic moulds for investment casting and 1 foundry uses silicone moulds. In Slovakia, 6 foundries use ceramic moulds for investment casting. The total summary is more than 100 percent in both cases, because many foundries use more than one type of mould or die.

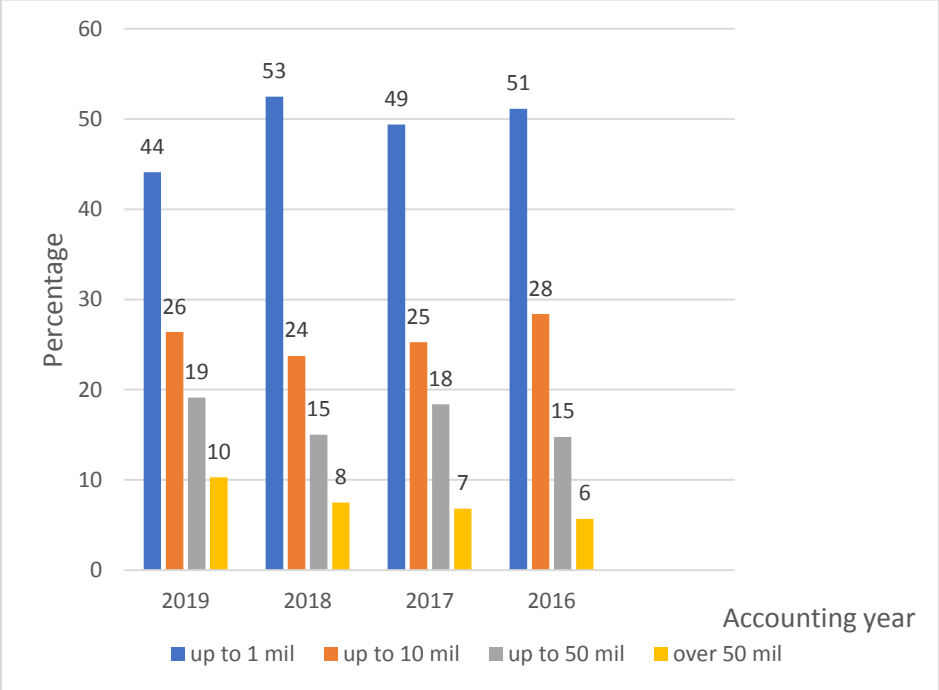

Figure 2 *Percentage distribution of revenues of foundries in Hungary*

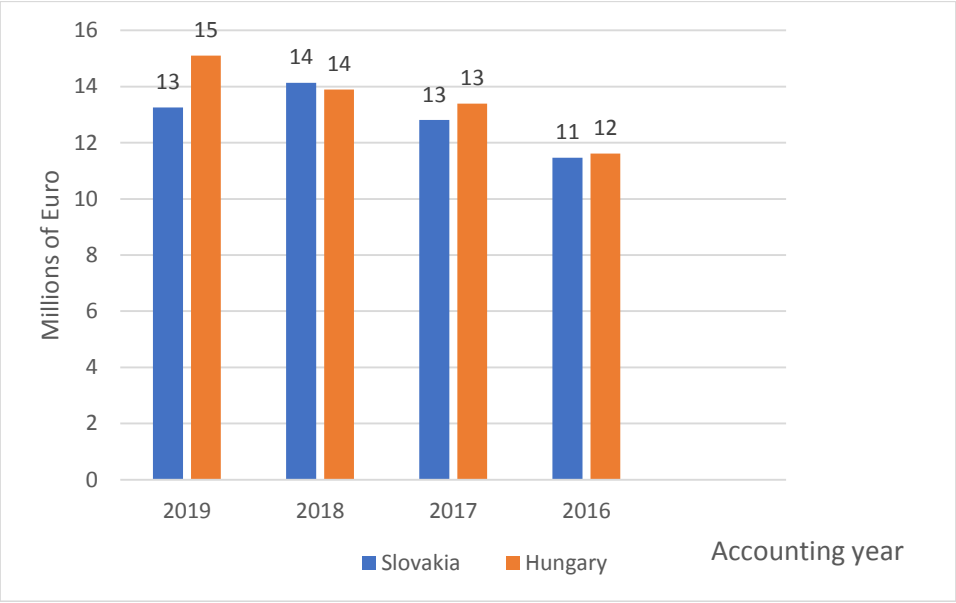

Figure 3 *Comparison of average revenues of foundries in Slovakia and Hungary*

Figure 7 shows percentage distribution of foundries in Slovakia and Hungary, using various moulding techniques. The foundries using ceramic moulds are not included. The total summary is more than 100 percent in both cases, because many foundries use more than one method of moulding.

Figure 8 shows percentage distribution of foundries in Slovakia and Hungary according to the number of employees.

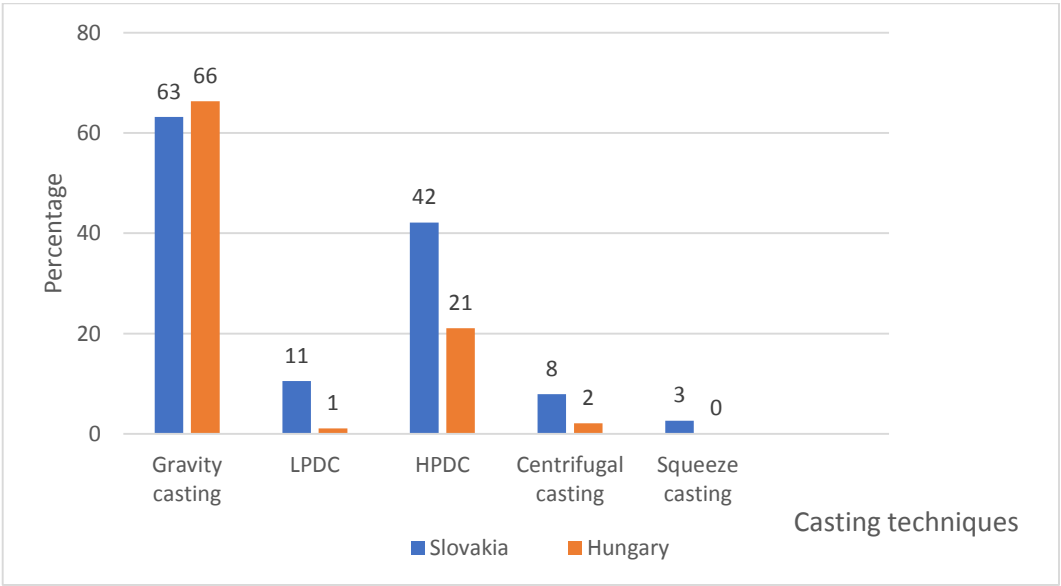

Figure 4 *Percentage distribution of casting techniques used in foundries in Slovakia and Hungary*

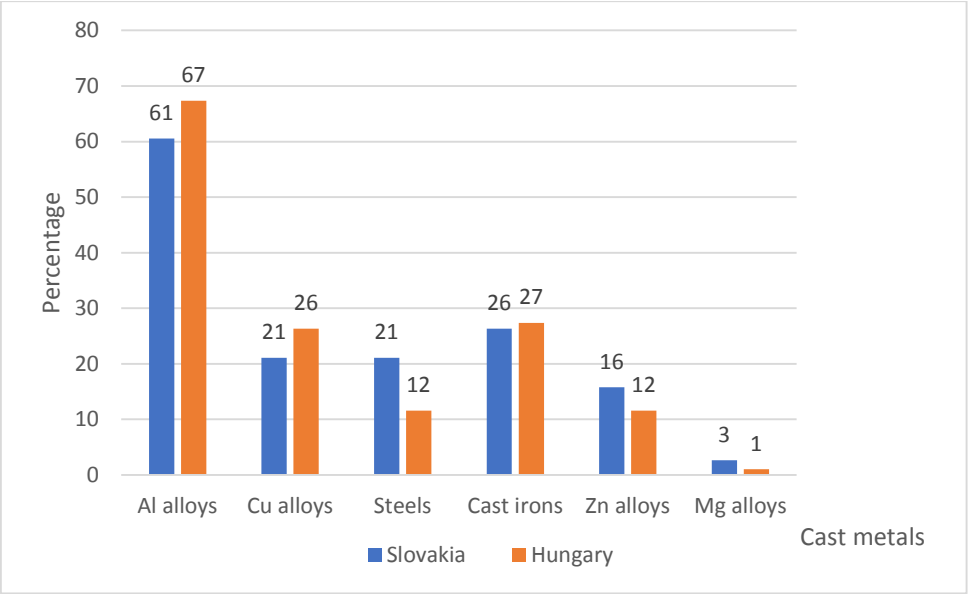

Figure 5 *Percentage distribution of foundries casting various metals and alloys in Slovakia and Hungary*

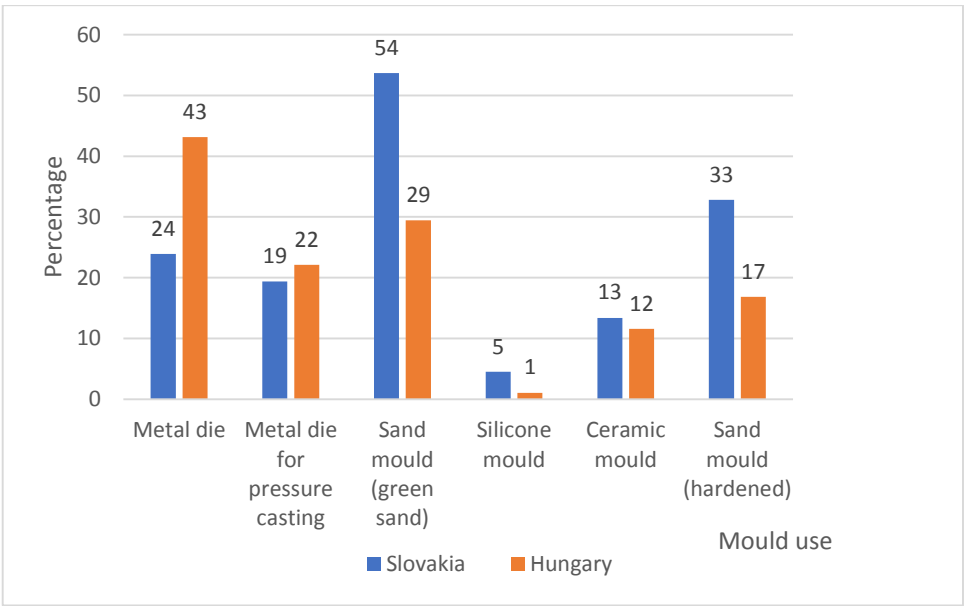

Figure 6 *Percentage distribution of foundries using various moulds and dies in Slovakia and Hungary*

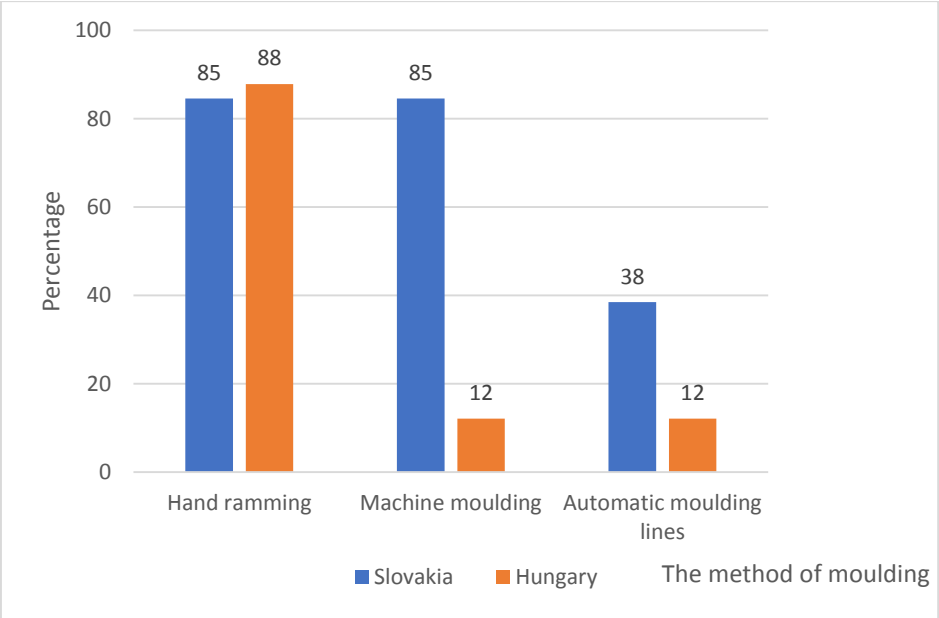

Figure 7 *Percentage distribution of foundries using various methods of moulding in Slovakia and Hungary*

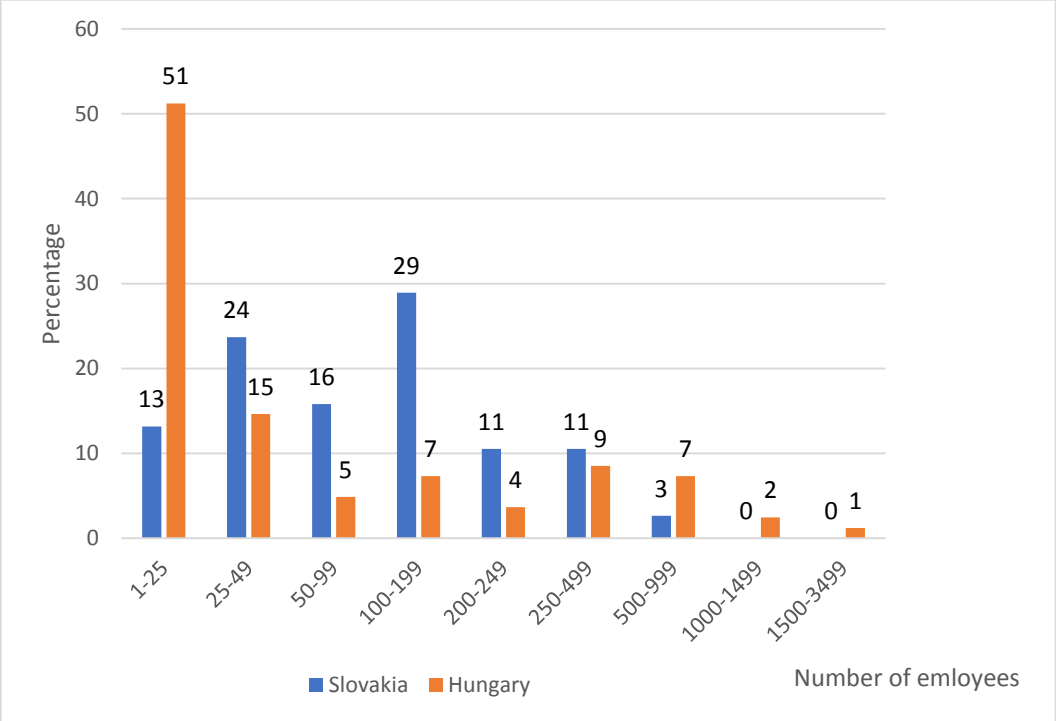

Figure 8 *Percentage distribution of foundries in Slovakia and Hungary according to number of employees*

DISCUSSION

The percentage distribution of revenues of foundries in Slovakia shows that most of the foundries have revenues from 1 to 10 million Eur, and very few of the foundries have revenues over 50 million Eur. In Hungary, the highest percentage of foundries have revenues up to 1 million Eur, but three times more percentage of foundries have revenues over 50 million Eur.

The average revenues of foundries in Slovakia and Hungary are quite similar.

The percentage distribution of casting techniques in Slovakia and Hungary shows that, in Hungary, lower percentage of foundries uses low pressure die casting (LPDC), high pressure die casting (HPDC) and centrifugal casting.

The percentage distribution of foundries casting various metals and alloys in Slovakia and Hungary is similar. In Hungary, lower percentage of foundries cast steels, zinc alloys and magnesium alloys.

The percentage distribution of foundries using various moulds and dies in Slovakia and Hungary shows many significant differences. In Hungary, significantly higher percentage of foundries uses metal dies for gravity casting, and significantly smaller percentage of foundries uses silicone moulds and hardened sand moulds.

The percentage distribution of foundries in Slovakia and Hungary, using various moulding techniques are quite different. Large amount of foundries in Slovakia uses two or even three moulding techniques. In Hungary, significantly smaller percentage of foundries uses machine moulding and automatic moulding lines.

In Slovakia, the largest amount of foundries has up to 199 employees. In Hungary, the largest amount of foundries has up to 25 employees. None of the foundries in Slovakia has more than 999 employee. In Hungary, 3 foundries have more than 999 employees.

CONCLUSION

The foundry industries in Slovakia and Hungary show many similarities and many differences. Both are interconnected in a large scale with automotive industry as their biggest customer, and both are oriented on export in a large scale. The total tonnage of castings in 2019 decreased in comparison with 2018. This can be due to the increasing demands for lightweight components and increasing use of non-metallic materials.

The year 2020 with worldwide pandemic restrictions and increased unemployment will have negative impact not only on the main customers of foundries, but on their whole supplier chain. This negative impact will be present even in 2021. Based on the crisis in 2009, it can be estimated that achievement of the pre-crisis level of production will require several years.

Acknowledgement

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