

## THE ROMANIAN MACHINE TOOL INDUSTRY IN THE LAST YEARS

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**Abstract:** The machine tool industry on the entire world now is into the greatest crisis from the Second World War. Also, in Romania the same crisis brought negative effects over the entire economic sector, especially on the machine tool segment. The present paper work tries to shows the situation over the last few years. The main parameters identified into the present paper work are the official values communicated by CROMUS (Romanian Machine Tool Association) to CECIMO (UE's Machine Tool Association), to AMT (American Machine Tool Association), to Gardner Publications, by the same authors under the CROMUS charge. The statistics shows also the overview on the non-conventional machines segment, included into the general machine tool industry, in order to can identify one future way.

**Key words:** Romanian Machine Tool Industry.

### 1. INTRODUCTION

The main official parameters as statistic general values about the Machine Tool Industry overall in the world are: P= Production, E=Exports, I=Imports, C=Consumption. These parameters are centralized and published every year by some famous publications as AMT-review (USA), Gardner publications (USA), CECIMO review (UE), based on the official values communicated by CROMUS (Romanian Machine Tool Association).

### 2. DESCRIPTION OF THE ACTUAL STAGE

Table 1 shows the general over view on the period 2000-2008, and estimation on 2009, about the four parameters. As diagram, these parameters are sown on the figure 1. The consumption is the most relevant parameter, which shows the dynamic of the sector. Every parameter is presented in the following tables.

Figure 1 shows the evolution along the years of the machine tools sector in Romania. This year the authors of the present paper work were charged by CROMUS to transmit these statistics, as resume from other marketing study realized by the same authors for UCIMU-Italy (Italian Machine Tool Association) on universitary collaboration.

**Table 1**

| Year    | Production | Exports | Imports | Consumption | % Import Penetration | Exports as % from Production |
|---------|------------|---------|---------|-------------|----------------------|------------------------------|
| 2000    | 40.1       | 29.6    | 28.2    | 38.8        | 72.8                 | 73.7                         |
| 2001    | 44.4       | 27.6    | 75.3    | 92.1        | 81.8                 | 62.2                         |
| 2002    | 47.3       | 32.9    | 55.0    | 69.4        | 79.2                 | 69.5                         |
| 2003    | 52.7       | 34.4    | 118.2   | 136.5       | 86.6                 | 65.3                         |
| 2004    | 71.4       | 40.3    | 148.6   | 179.7       | 82.7                 | 56.3                         |
| 2005    | 77.0       | 58.2    | 188.2   | 207.0       | 90.9                 | 75.6                         |
| 2006    | 63.6       | 74.7    | 228.2   | 217.1       | 105.1                | 117.5                        |
| 2007    | 43.2       | 78.8    | 377.3   | 341.7       | 110.4                | 182.4                        |
| 2008(p) | 64.3       | 93.4    | 272.8   | 243.7       | 111.9                | 145.2                        |
| 2009(E) | 27.4       | 30.7    | 267.8   | 264.5       | 101.2                | 112.0                        |

Source: Romanian Center for Machine Tools and Tools (CROMUS), (p) preliminary, (E) estimation

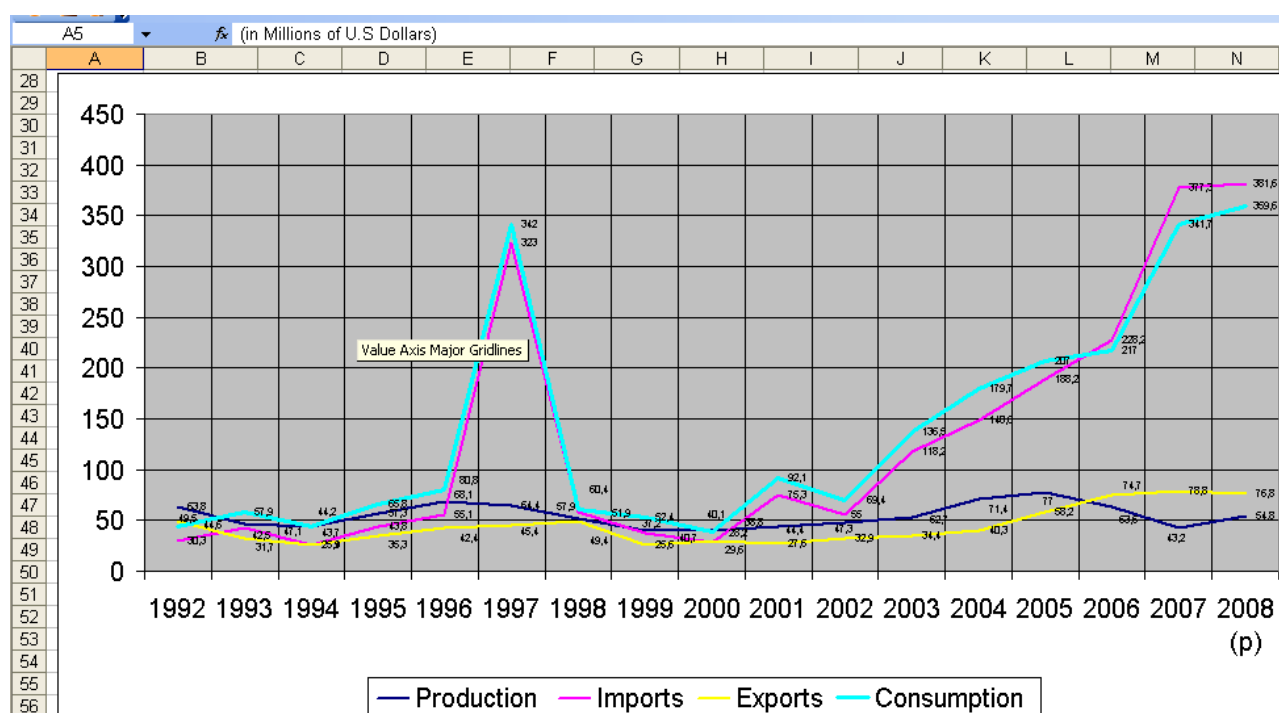


Fig.1.

Table 2. Production mil. dol. USA

|                               | 2004 | 2005 | 2006 | 2007 | 2008 (p) |
|-------------------------------|------|------|------|------|----------|
| MACHINE TOOLS TOTAL           | 71,4 | 77.0 | 63.6 | 43.2 | 64.3     |
| METAL CUTTING MACHINES        | 49,6 | 48,6 | 31,9 | 21,1 | 33.3     |
| EDM, spark erosion            | 1,3  | n.a. | -    | -    | -        |
| Machining Centers             | 0,7  | 0,6  | -    | 0.3  | 4.5      |
| Lathes (incl.turning centers) | 1,9  | 2,0  | 0,9  | 2,6  | 3.5      |
| Drilling machines             | 9,0  | 4,6  | 0.5  | -    | 8.2      |
| Boring machines               | (b)  | (b)  | (b)  | (b)  | (b)      |
| Boring milling machines       | (b)  | (b)  | (b)  | (b)  | (b)      |
| Milling machines              | (b)  | (b)  | 2,6  | 2,5  | 1.8      |
| Grinding machines             | 8,5  | 3,6  | 5,7  | 4,2  | 4.1      |
| Honing & Lapping machines     | (c)  | (c)  | (c)  | (c)  | (c)      |
| Shaping & Slotting machines   | 0,9  | 1,0  | -    | -    | -        |
| Other metal cutting machines  | 27,3 | 41,4 | 11,4 | 11,5 | 13.0     |
| METAL FORMING MACHINES        | 16,8 | 19.9 | 16,9 | 15,6 | 23.8     |
| OTHER MACHINE TOOLS           | 5,0  | 8.5  | 14,8 | 6.5  | 7.2      |
| PARTS AND ACCESSORIES         | 38,4 | 39,5 | 25,9 | 22,9 | 23.9     |

Source: ROMANIAN CENTER FOR MACHINE TOOLS AND TOOL, (p) preliminary, (b) included in "Drilling Machines", (c) included in "Grinding machines", na – not available

**Table 3. Exports millions USD / mil. EURO for 2008.**

|  | 2004 | 2005 | 2006 | 2007 | 2008 |
|--|------|------|------|------|------|
| <b>MACHINE TOOLS TOTAL</b>                     | 40.3 | 58.2 | 74.7 | 78.8 | 93.4 |
| Metal cutting total                            | 26.5 | 36.4 | 53.9 | 51.5 | 66.8 |
| Physico-chemical (laser, ultrasonic, EDM, etc) | 1.9  | 0.5  | 0.8  | 13.5 | 8.3  |
| Machining centers                              | 3.7  | 0.2  | 0.3  | 1.1  | 1.6  |
| Lathes   | 5.1  | 10.5 | 17.5 | 23.1 | 22.8 |
| Drilling machines                              | 0.7  | 2.1  | 1.5  | 2.4  | 3.8  |
| Boring milling machines                        | 6.1  | 4.7  | 9.6  | 5.2  | 8.4  |
| Milling machines                               | 3.1  | 4.3  | 4.8  | 5.9  | 6.9  |
| Threading or tapping                           | 0.0  | 0.0  | 0.1  | 0.1  | 0.1  |
| Grinding machines                              | 3.2  | 5.3  | 7.3  | 2.3  | 5.5  |
| Gear cutting                                   | 1.6  | 0.6  | 0.8  | 1.3  | 1.3  |
| Other metal cutting machines                   | 1.1  | 8.2  | 11.2 | 3.5  | 8.1  |
| Metal forming total                            | 13.8 | 21.8 | 20.8 | 27.3 | 26.6 |
| Forging or die stamping                        | 4.4  | 3.5  | 3.5  | 6.3  | 6.2  |
| Bending or forming                             | 3.7  | 9.2  | 8.7  | 7.6  | 6.8  |
| Shearing machines                              | 1.5  | 1.8  | 1.3  | 1.5  | 1.6  |
| Punching or notching                           | 0.8  | 3.8  | 1.3  | 3.8  | 3.5  |
| Presses  | 2.6  | 2.8  | 5.3  | 7.3  | 7.6  |
| Other metal forming                            | 0.8  | 0.7  | 0.7  | 0.8  | 0.9  |

**Table 4. Imports millions USD / Mil. EURO for 2008**

|  | 2004  | 2005  | 2006  | 2007  | 2008  |
|--|-------|-------|-------|-------|-------|
| <b>MACHINE TOOLS TOTAL</b>                     | 148.6 | 188.2 | 228.2 | 377.3 | 272.8 |
| <b>Metal cutting total</b>                     | 81.2  | 114.4 | 138.2 | 246.0 | 183.8 |
| Physico-chemical (laser, ultrasonic, EDM, etc) | 5.5   | 9.3   | 11.6  | 13.5  | 8.6   |
| Machining centers                              | 10.8  | 19.5  | 17.2  | 25.0  | 54.6  |
| Lathes   | 17.6  | 29.6  | 31.6  | 59.0  | 40.8  |
| Drilling machines                              | 2.4   | 3.1   | 5.1   | 5.3   | 1.8   |
| Boring milling machines                        | 3.8   | 4.8   | 6.5   | 10.5  | 12.0  |
| Milling machines                               | 8.6   | 9.0   | 8.8   | 13.4  | 4.9   |
| Threading or tapping                           | 0.8   | 0.8   | 0.7   | 1.9   | 0.7   |
| Grinding machines                              | 17.4  | 21.3  | 22.9  | 56.0  | 45.5  |
| Gear cutting                                   | 1.3   | 2.7   | 2.6   | 12.8  | 2.3   |
| Other metal cutting machines                   | 13.0  | 14.3  | 31.2  | 48.6  | 14.0  |
| <b>Metal forming total</b>                     | 67.4  | 73.8  | 90.0  | 131.4 | 89.0  |
| Forging or die stamping                        | 6.4   | 5.5   | 5.5   | 18.3  | 16.2  |
| Bending or forming                             | 21.7  | 30.2  | 33.7  | 48.6  | 36.8  |
| Shearing machines                              | 5.5   | 3.8   | 6.3   | 11.5  | 9.6   |
| Punching or notching                           | 6.4   | 4.8   | 6.3   | 5.8   | 5.5   |
| Presses  | 11.6  | 10.8  | 16.9  | 18.4  | 12.0  |
| Other metal forming                            | 15.8  | 18.7  | 21.3  | 28.8  | 8.9   |

In the period 1997-1998 it was the investment “boom” in Romania, by the increasing of the main sectors.

This fact is reported as import increasing and as consumption increasing. Later, the production and the export were reduced together the Romanian general economic stage at this time until 2000 year. In 2000 it started one long period of general increasing in context with the new political Romanian position with better perspective, having a little period of oscillation after eleven September, but fortunately during one single year only. The increasing of the entire Romanian economy, the investments in the Industry as well overall

in the world was one long period of progress and positive process until 2008. Even the production and exports remained average constants, the consumption in the machine tool domain increased because the imports increased up to seven times against the indigene production.

How to explain this fact? How is it possible?

The explanation consists by the new positive position of the Romanian economic sector in the political area inside the European Union and NATO. This fact was favourable for the investments in the entire Romanian industry. The fact that the indigene machine tool production and exports were average

constant, even the increasing into the rest of world, feel that the market of the indigene machine tool producers is outside the country at export and the technical request for the investments on this period.

Now after 2008 the crisis is overall installed, and especially in Romania it is very hard. The real values of the main four parameters estimated for 2009 and 2010 are very pessimists, and the crisis end is unknown yet. The statistics on machine tool types regarding the indigene production is shown in table 2, the exports in table 3, and the imports in table 4. These values cover the period 2004-2008. As we can see in the figure 1, the increasing was stopped in 2008, and the decreasing is installed, but without any prospective.

Now, about the non-conventional technology, and the specific machines (that means the EDM, laser, ultrasonic, water-jet machines and others), even the indigene production is missing, the consumption is big enough, because the imports are high enough. That means the request of these machine types is also high, even it exists exports (as retrofitting or second hand machines).

Here the author's opinion is that the non-conventional machines sector must be treated together the entire machine tool domain, irrespectively inside the cutting machine segment, which together the forming machine segment, covers the entire machine tool industry. Normally, all the exhibitions or other similar international activities, cover the non-conventional machines segment together the cutting machines. Even the companies' specialization covers both cases into a single great industrial concept, now, the present paper work shows the main over mentioned four parameters (P, E, I, C) organized on the entire machine tool segment (see the tables 2, 3, 4).

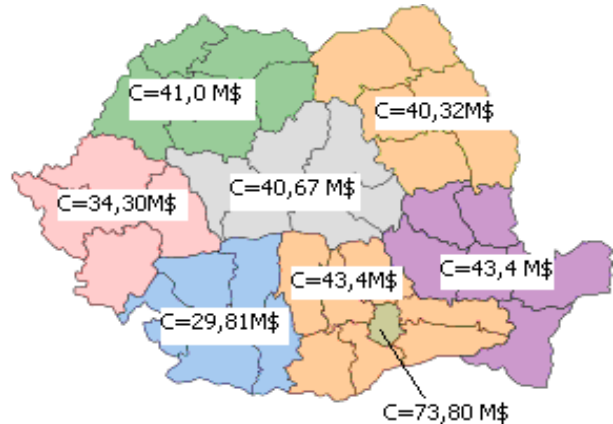
**3. CONCLUSIONS**

The evaluation in the last years is used bellow for the estimation for 2009:

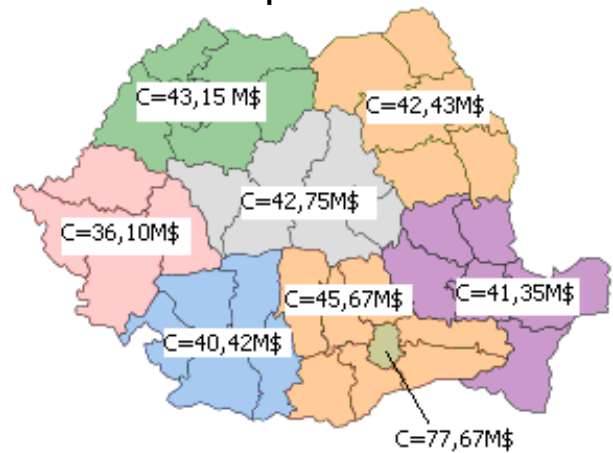
**P = - 50%, I = - 30%, E = - 60%, C = - 26.7%**  
 Absolute values for 2009 of the four main parameters (estimated):  
**P = 27.4 M\$, I = 267.8 M\$, E = 30.7 M\$, C = 263.7 M\$**

The official statistics will be published in July, 2010, with the final corrections.

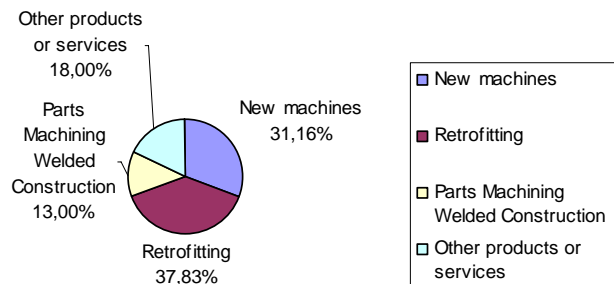
All the next figures (fig.2 to fig.12) show by comparing between the years 2007 to 2008 the last evolution in order to can conclude about 2009 and 2010.



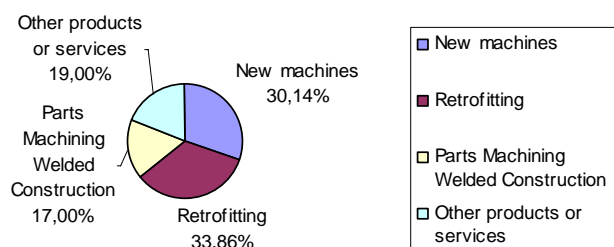
**Fig.2.Repartition of machine tool consumption on 2007.**



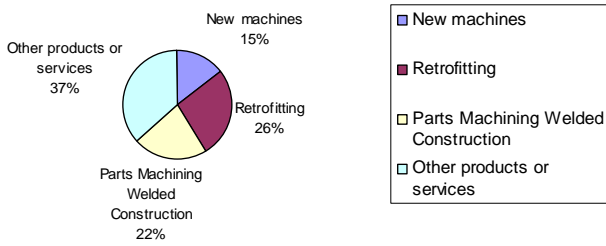
**Fig.3. Repartition of machine tool consumption on 2008.**



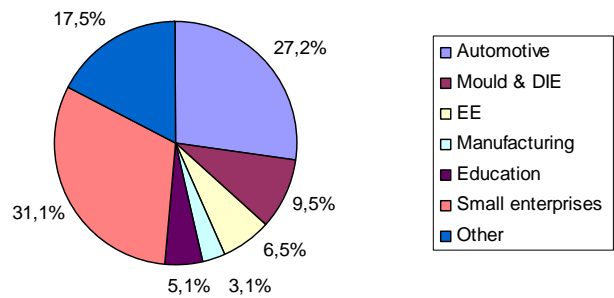
**Fig.4. Machine tool Production Structure on 2007.**



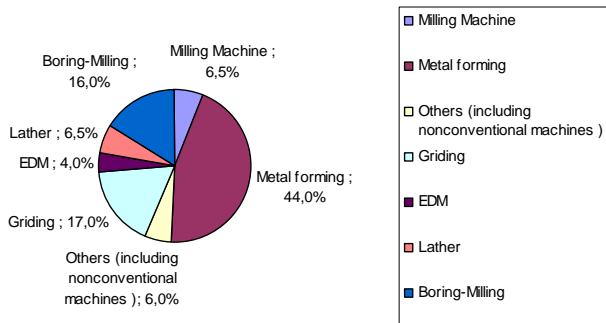
**Fig.5. Machine tool Production Structure on 2008.**



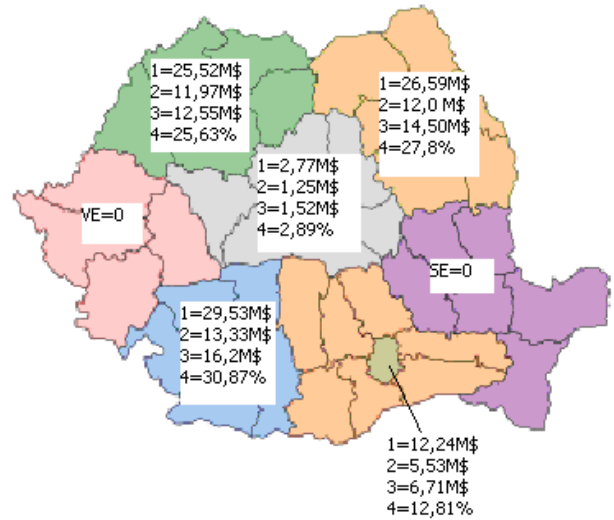
**Fig.6. Machine tool Production Structure on 2009 (estimative).**



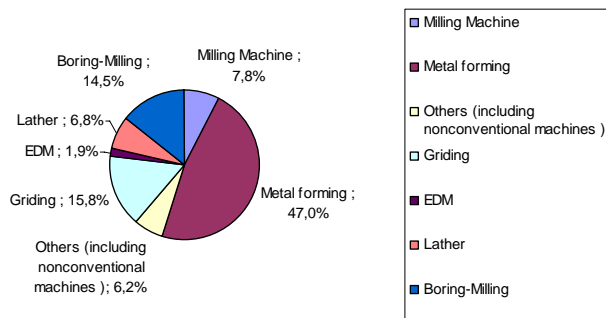
**Fig.10. Machine Tool Consumption Repartition on main Industrial Sectors on 2008**



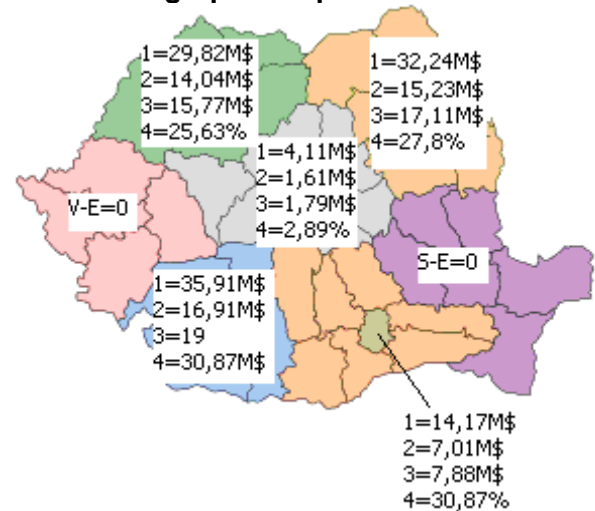
**Fig.7. The Import Structure on main machine tool types (as percent from the total imports) on 2007.**



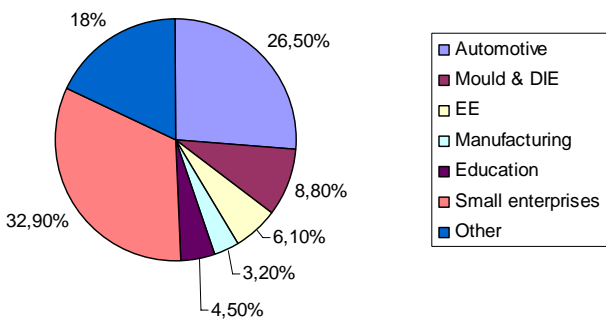
**Fig.11. Machine Tool Production Geographic Repartition 2007.**



**Fig.8. The Import Structure on main machine tool types (as percent from the total imports) on 2008.**



**Fig.12. Machine Tool Production Geographic Repartition 2008**



**Fig.9. Machine Tool Consumption Repartition on main Industrial Sectors on 2007**

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