Making the (up)grade

A research study into the role of finance in the global machine tools market

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Management Summary

- Industrial productivity is a key goal in economies across the world, especially in high margin, high value-added manufacturing segments which can make a disproportionately large contribution to GDP compared to the manufacturing sector as a whole.

- High value-added manufacturing tends to have a complex supply chain of specialist component suppliers, who rely on specialized machine tools technology. Many of these specialist component manufacturers are small- and medium-sized enterprises (SMEs).

- Productivity amongst the supply chain of machine tools users relies on access to up-to-date technology, which allows improved throughput rates and lower energy consumption.

- Finance is playing a critical role in maintaining the momentum of machine tools investment: In slower growth economies it is making investment possible even in times of uncertainty; in high growth economies it is helping investment rates match the demand pull from the economy as a whole.

- In most economies SME machine tools users find it difficult to access traditional loan finance, and so the attraction of alternative financing schemes, particularly when integrated into the sales proposition of machine tool Original Equipment Manufacturers (OEMs), is growing.

- New research from Siemens Financial Services, conducted amongst the global top 80 machine tools OEMs, has revealed the growing importance of finance in allowing machine tools users to upgrade their technology to improve productivity and reduce costs.

- 84% of machine tool OEMs report that their customers are experiencing increased difficulty in accessing traditional bank loans to fund equipment acquisition.

- 64% say asset finance has been "highly important" in enabling their customers to acquire equipment over the last two years. An even higher proportion of machine tool OEMs (68%) believe that asset finance will be “highly important” in five years time, an
indication that demand for asset financing will grow through to the end of the decade

- 61% of machine tool OEMs have seen increasing demand for financing options from their customers over the last two years, with leasing cited as the principal financing method

- These figures show the importance of machine tool OEMs having an integrated financing facility that is tailored for their equipment and their customers’ investment requirements

- Specialist financiers – often the financing arm of an industrial provider – are increasingly active in supporting machine tools sales, whether financing their own equipment or third party technology

- An in-depth understanding of machine tools technology helps these specialist financiers to deliver more informed, flexible and tailored financing decisions to machine tools users
Precision manufacturing and the machine tools industry

Industrial productivity is a key goal in economies across the world, especially in the high margin, high value-added manufacturing segment which can make a disproportionately large contribution to GDP when compared to the overall manufacturing sector.

An increasing proportion of industry – both in mature and in rapidly growing economies – is now highly specialized, producing products and components to extremely exacting specifications for very high tech applications such as automotive, aerospace, medical, science, defence and so on. As one authority states, "establishing an advanced manufacturing sector will continue to be a priority for many countries."¹ Snapshots from around the globe give a consistent picture. In the US, "precision engineering, high margin and niche manufacturing business ... [has] been leading the U.S. economic recovery."² In the UK, precision manufacturing "accounts for half of manufacturing exports" and makes a "significant contribution to GDP".³ Looking to Asia, "India is largely moving towards high-end manufacturing."⁴

The supply chain for these industries carries a particularly high concentration of in-country, high-precision machining companies. This community of component manufacturers relies on precision machine tools and tooling systems to produce their products, and it is this area of the industrial landscape that forms the focus for this study.

Characterizing machine tools users

One reason for singling out the machine tools industry is that it provides a metaphor for quite a number of other markets, both in the challenges that machine tools Original Equipment Manufacturers (OEMs) have in maintaining their sales, and in the challenges faced by the precision companies that need to acquire up-to-date equipment. The challenge for machine tool users is, in a nutshell, how to access the latest technology in order to remain competitive and become more efficient. The challenge for machine tools OEMs is how to help their customers afford replacement or new technology when access to credit is uncertain.

By the machine tools industry, we mean machining centers, lathes, drills, boring tools, milling tools, grinders, polishers, presses, stone/wood/metal working tools. Across the ten countries studied in this report, acquisition (consumption) of machine tools amounted to over $63 billion.

Precision component manufacturers form the varied supply chain that feeds into the making of products such as vehicles, aircrafts, weapons systems or sophisticated medical devices. Although large companies are active in supply chains, the vast majority of participants tend to be small to medium-sized enterprises (SMEs, defined as 50-249 employees) and are often highly skilled, niche and producing sophisticated products on a just-in-time basis. Component providers in these supply chains also tend to be critical suppliers to the large buyer at the end of the chain. In other words, the productivity of the component supplier

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¹ Institute for Defense Analyses, Emerging global trends in advanced manufacturing, 2012
² PMI Services, 2013 Manufacturing trends
³ Baker Tilly, Manufacturing
⁴ India Brand Equity Foundation, The manufacturing sector in India, June 2013
Community impacts on the productivity (and costs) of the end buyer, and therefore also impacts that buyer’s competitiveness in its markets.

In all countries studied in this research paper, SME machine tools users report that they find it harder to access standard relationship credit than larger firms. This is just as true in rapidly developing economies such as China, Russia and India, as it is in Europe or the US. Research has shown that lending to non-financial corporations in Europe has fallen dramatically from 2004-8 growth levels.\(^5\) On the other side of the world, Chinese SMEs find it difficult to raise the finance they need to keep pace with the country’s growth rates (still running at over 7% per annum).\(^6\)

**Machine tools investment trends**

In all examined Western European countries, the global economic slowdown of 2008-11 caused a dramatic fall in equipment investment by machine tools users (see graphs below). Access to affordable and appropriate finance is therefore now fundamental in these countries to revive up-to-date machine tools equipment investment.

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5 Deutschebank Research, Five years after subprime, 7 March 2012
6 See, for instance: ICIS, China’s SMEs face new credit problems, 7 July 2013; A Silbert, Financing obstacles for SMEs in China, 1 June 2012; Joaobing, Yuanji, Financial market structure and SME’s financing constraints in China, 2011 International conference on financial management and economics IPEDR vol.11
In contrast, the consumption of machine tools has grown in China, Russia, India, Poland, Turkey and the US, despite the world economic slowdown. This increased investment in machine tools should, however, be viewed in the light of the growth of some of these economies over the same period. If machine tools market growth is roughly equal to, or even outstripped by, increases in GDP, then this may be interpreted as somewhere between stasis and net shrinkage relative to the size of the economy.

Machine tools consumption growth was therefore compared to GDP growth. In three rapidly developing countries – China, India and Turkey – this comparison did indeed reveal that GDP growth was broadly in line with, or in one case outpacing, growth of the machine tools market. In China and Turkey, the difference between machine tools growth and GDP growth is seen to be negligible. In India, GDP growth is significantly ahead of machine tools growth.

![Graph: Does GDP growth broadly equal or outstrip machine tools growth?](image)

The exceptions – amongst high growth economies – were Russia and Poland. In the case of Russia, this may be explained by the fact that Russia has an official policy to enable investment in the renewal of its industrial infrastructure, which may have skewed the picture over the period.

The Russian Government is interested in strengthening its national manufacturing base and has allocated significant budgets to support domestic manufacturers of machine tools and tooling machines. Demand is certainly high. UKTI Russia carried out a study in the machine-tools intensive area of Sverdlovsk, which revealed a huge demand for equipment replacement and renewal. The volume of governmental investment through to 2016 is estimated at £533 million, which includes £271 million of the Federal Government budget investment and £262 million of other non-state budget investments. Within this scheme, foreign machine tools OEMs are being encouraged to open manufacturing facilities in Russia in order to reduce the country’s reliance on imports. The challenge, however, is that Russian businesses have to find a sustainable way of financing machine tools investments.

7 UK Trade and Industry, Machine tools refurbishment opportunities in Sverdlovsk, 6 July 2012
8 MIA, Machine tools in Russia, 2013
Credit availability for most Russian SMEs is generally tight. The World Bank/International Finance Corporation 2012, Ease of Doing Business Index\(^9\) still ranks Russia as 120\(^{th}\) in the world, and more particularly ranks the country 98\(^{th}\) for ‘getting credit’, below India (40\(^{th}\)), China (67\(^{th}\)) and Turkey (78\(^{th}\)). This would imply that the availability of tailored, flexible financing solutions for machine tools investments will play a significant role in maintaining the momentum of such investment in the Russian market.

In Poland, there are similar pressures to replace an aging industrial infrastructure – as in Russia. There has also been substantial foreign direct investment in recent years, specifically in the ‘metal and machinery products’ category, which may have provided a short-term stimulus for machine tools consumption. The country’s special economic zones (SEZ) also provide a favorable environment for such investment, although commentators have recently warned that the life of these zones needs to be extended beyond 2020 if the stimulus effect is to be sustainable.\(^10\) In terms of access to finance, Polish SMEs sit a little below the EU norm, according to the European Commission’s SME Access to Finance (SMAF) Index,\(^11\) underlining the significance of accessing appropriate, tailored financing options to support machine tools investments.

Like Russia and Poland, machine tool consumption growth in the US also outpaced GDP growth. In the US, following a sharp drop in industrial production in 2008 as a result of the financial crisis, industrial production has been picking up gradually since 2009,\(^12\) with machine tool orders in particular increasingly rapidly. In fact, according to the United States Manufacturing Technology Orders (USMTO) report, machine tool orders in 2012 were the highest in sixteen years.\(^13\) The 2012 World Machine Tool Output & Consumption Survey also reported a 19% increase in machine tool consumption in the US compared to the previous year, with the value of equipment installed reaching $8.7 billion, just behind the world’s largest consumer China.\(^14\) The figure is set to grow by 8 per cent in 2013 to $9.4 billion.\(^15\)

A host of factors have contributed to the US manufacturing renaissance in recent years. According to a report by a management consultancy,\(^16\) certain conditions, including transportation and energy costs, have made re-shoring research and development (R & D) and production to the country favorable. The shale gas revolution and other factors

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10 Warsaw Business Journal, UN report: Poland’s FDI figures underwhelming, 13 February 2013  
12 Federal Reserve  
13 The Association for Manufacturing Technology, USMTO news release for December manufacturing technology orders, 11 February 2013  
14 Gardner Research, The world machine tool output & consumption survey 2013  
15 EMO 2013: USA’s industrial sector back on track with state-of-the-art technology  
16 PWC, A homecoming for US manufacturing?, September 2012
increasing the availability of cheap energy and fuel sources is expected to bring down manufacturing costs, making domestic production in the US an increasingly attractive option. The domestic chemicals and metal manufacturing sectors especially will benefit, buoyed up by more affordable energy and greater downstream demand from increased drilling.

Efforts to mitigate supply chain risk and disruption (which cost US Industrial companies $2.2 billion in 2011) is also prompting manufacturers to localize production. Meanwhile, it is expected that more outsourcing work in China will return to the US since China is no longer the "default location" for low-cost plants to supply the US market. An industry report revealed that manufacturing steel products in the US instead of China can provide a net cost benefit of 2% of revenue. In addition, the disparity in wealth between the US and other emerging markets, as well as the sheer size of the US market, are steering decisions to invest in domestic production of goods targeted for US consumption.

Machine tool users in the US are expected to increase their capital investments by 10% in 2014. In particular, demand for new planes from commercial airlines, as well as an expected increase in vehicle sales as the economy recovers, will help create opportunities for the machine tool industry. Market growth is expected to be primarily driven by the electrical engineering industry, the automotive industry, the mechanical engineering, metal production, and metalworking sectors.

Machine tools – the urgency of upgrade and investment

The dip in machine tools investment in European countries shown in the previous section underlines the fact that European SME machine tool users have tended, in recent times, to 'sweat' their equipment, keeping it for longer in the face of capital budget restrictions. The high residual value of specialist machine tools has meant that they have had a valuable asset against which they have been able to refinance to raise working capital. However, as the machine tool fleet ages, those residual values have naturally declined over time, restricting this approach as a means of raising working capital.

Other pressures have also come into play, particularly the fact that a new generation of machine tool technology is not only offering greater productivity and capabilities, but also hugely improved energy efficiency. With rising electricity prices, not being able to upgrade machine tools systems directly incurs overspending on electricity costs, and this is a major financial burden when one considers that – over the lifetime of a machine tool system – power costs are usually many times the original cost of the system. A recent independent study commissioned by Siemens Financial Services showed that industry across Europe could save over billions of Euros over the next five years simply by switching to equipment that utilizes variable speed drives (VSDs) to control the energy use of the industrial motors embedded in those systems. At a conservative estimate, VSDs reduce electricity consumption by at least 25%, in some cases, double that proportion.

In rapidly developing economies, such as those in China and Turkey, access to finance for machine tools investment is essential to help that investment rate match the demand for

17 PWC, A homecoming for US manufacturing?, September 2012
18 Ibid.
19 EMO 2013: USA’s industrial sector back on track with state-of-the-art technology
20 Ibid.
their products. And in Russia and Poland, where the industrial infrastructure is still going through the process of wholesale upgrading, financing solutions are critical to making the scale of that exercise affordable and cash-flow friendly.

Calibrating the importance of asset finance in machine tools investments

Machine tools users, and indeed machine tools OEMs, have therefore been exhibiting a rapidly increasing interest in using non-bank finance to enable affordability and ease of acquisition. Leasing arrangements are coming to the fore as the financing method of choice to make this affordability possible, in the absence of traditional bank finance. This assertion is proved by the key research figures published in this study, which track the importance of financing options in effecting investments (by machine tools users) and sales (by machine tools OEMs).

Original research was conducted amongst the global top 80 machine tools OEMs. This community covers 55% of machine tools sales/acquisition across the world.

The results are as follows:-

- 84% of respondents report that their customers are experiencing difficulty in accessing finance to fund equipment acquisition
- 64% say asset finance has been "highly important" in enabling their customers to acquire equipment over the last two years
- Looking to the future, 68% say it will be “highly important” in five years time, indicating demand for asset financing in the machine tools sector will grow through to the end of the decade
- 61% have seen increasing demand for financing options from their customers over the last two years

A financial director of a Russian company specializing in metal goods fabrication commented, “The traditional bank lending system is a very bureaucratic process in Russia and this has inevitably hindered the growth of our business. Asset finance will therefore have an increasingly crucial role to play in the expansion and further development of our company.”

A Chinese industrial machine tools user noted, “Banks are reluctant to lend, so many industrial companies have to look for alternative financing elsewhere.”

A French enterprise that provides a broad range of industry-specific products for the oil & gas as well as metal and mining industries predicted, “I believe the factor that will drive growth of asset finance in the industry is its flexibility. We can acquire the most advanced equipment even without a large upfront capital and own the equipment at the end of the leasing period. Indeed, I even anticipate leasing becoming the main acquisition method because of its high flexibility.”

A manager from a German firm producing precision tools, gages and customized machinery, stated “Leasing is already a very common practice these days. Of course companies with strong equity can choose to refinance themselves, but with a low interest rate, leasing represents a very attractive financing option and companies can spend their precious capital elsewhere that can truly drive value for the business.”
Leasing, specifically, plays a very significant role in machine tools equipment acquisition. 55% of respondents highlight leasing as the principal funding source used by machine tools users.

The role of asset finance in the international machine tools market

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<th>Statement</th>
<th>% of machine tools OEMs that agreed with the statement</th>
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<tbody>
<tr>
<td>Customers have had difficulty accessing credit for machine tools investments</td>
<td>84%</td>
</tr>
<tr>
<td>Asset finance has been HIGHLY IMPORTANT for customer investment over the last two years</td>
<td>64%</td>
</tr>
<tr>
<td>Asset finance will be HIGHLY IMPORTANT for customer investment over the next five years</td>
<td>68%</td>
</tr>
<tr>
<td>Increasing customer demand for equipment financing options over the last two years</td>
<td>61%</td>
</tr>
<tr>
<td>Leasing is the customer’s principal funding source for machine tools acquisition</td>
<td>55%</td>
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These figures all point to the growing popularity of asset finance generally, and leasing and rental in particular, as a form of tailored finance that enables machine tool OEMs to facilitate sales, while also making it affordable for end-users to upgrade their technology to be more productive, to consume less energy and become more competitive.

The role of asset finance

Specialist asset financiers, especially those with an industrial background, tend to have a more in-depth understanding of the machine tools as an asset category as well as the business models, benefits and business risk involved with machine tools applications. They are therefore more inclined and more able to craft financing arrangements that fit the end-user’s particular circumstances and cash flow needs. Such tailored asset financing arrangements can be flexed by the finance provider to meet the specific business needs of each customer. In this way, regular (monthly or quarterly) lease payments can be related to the expected benefits-over-time gained from an upgraded and extended machine tool.
system. These benefits could range from improved productivity, access to new markets to multi-tasking and operating cost savings from energy efficiency.

Machine tool OEMs are increasingly interested in integrating finance in their sales proposition. This allows them to have sales conversations where their customers are largely freed from worries over capital budgets and whether they can afford their optimum choice of equipment – if the optimum system for the customer involves a higher outlay, then the finance plan accommodates the requirement through managing the payment schedule. As specialist asset financiers have expert insight into the market dynamics and professional knowledge on the applications of equipment, they can competently validate the business viability of a machine tool implementation. These specialist financiers are also able to accurately access the collateral value of a machine tool and take this into account when conducting credit evaluation. As a result, they often exhibit greater willingness to take on financing requirements that traditional banks might not be capable of accommodating.

Asset finance plans are also emerging on the market specifically designed to enable energy-efficiency investments. In a nutshell, these schemes wrap everything into a single financing package, including the energy efficiency assessment, the equipment itself, installation etc., all via a loan, lease, rental or hire purchase arrangement. Payments are designed to be equal to, or lower than, the energy savings and in many cases deliver savings and net positive cash flow immediately.

Where a project cannot completely offset the equipment upgrade with energy-efficiency cost savings, the financing arrangement nevertheless subsidizes the larger part of the upgrade cost. In the manufacturing sector, this is often highly attractive as up-to-date equipment may not only lower energy costs, but also boost productivity and extend manufacturing capability, generating more revenue and margin.

A purchasing manager from a large US precision components manufacturer for different industrial applications observed, “The main factor that will drive growth in the use of asset finance in industry is the great recognition of the need to free up capital for applications elsewhere. Nowadays more and more companies realize the importance of capital expenditure in other key areas such as research and development as well as marketing in order for the business to grow and asset finance will help facilitate that development.”

The chairman of a Polish firm manufacturing components for the aerospace, automotive and machine industry, noted, “Leasing provides numerous advantages, but most importantly, it avoids freezing capital. When compared to other financial services such as bank loans, the interest rates are more attractive. In my opinion, asset finance will continue to play a more and more important role for Polish manufacturers – also among small enterprises.”

A UK precision engineering company specializing in turning, drilling, milling and threading said, “I never consider approaching banks for loans since asset finance is readily available. The attractive thing about it is that it is an easy and efficient application process.” Another British machine tools user added, “We expect this credit facility to grow in popularity as it is a no-brainer.”

A finance agreement under this kind of integrated scheme has the potential advantage of tax efficient, fixed payments for the agreement term, which are calculated taking into account
the type of equipment, its expected working life and the customer’s individual circumstances. In addition, the customer taking out the finance may be able to wrap other aspects such as service into their monthly payments, as well as negotiate upgrades and add-ons in the future as their needs change.

**Conclusion**

In summary, the findings of this research report confirm the importance of finance in enabling machine tools OEMs across the globe to stimulate sales. Similarly, the research findings also underline the rising demand for equipment (asset) finance from the customers of machine tools OEMs – a demand which is predicted to steadily rise to the end of the decade.

In slower growth economies, many hit by constrained budgets and austerity measures, asset finance (and mainly leasing and rental according to our research respondents) is enabling machine tools users to stop 'sweating' their equipment assets and upgrade to more productive, more energy-efficient alternatives, in order to maintain competitive edge. In rapid growth economies, asset finance is helping machine tools users to acquire the equipment they need to keep pace with overall economic growth, in a way that is cash-flow friendly and sustainable, aligning payments to the earnings enabled by the equipment.

As access to finance for SMEs remains somewhat constrained in many parts of the world, and since bank regulation has become more stringent, it is the contention of this paper that asset finance for machine tools investment will continue to grow in importance for OEMs and users alike.

**Methodology**

Research was conducted by telephone amongst the global top 80 machine tools Original Equipment Manufacturers (OEMs) between July and August 2013. All OEMs interviewed had sales across the ten countries which are the subject of the study. These countries include China, France, Germany, India, Poland, Russia, Spain, the UK, the US and Turkey. Respondents were interviewed on their views in relation to the importance, demand and future trends of equipment sales finance. Interviews were conducted by independent third party research organization MindMetre Research (www.mindmetre.com).