



Risk, Reality and Reward: A Navigation Playbook

Black Swan Siblings: How Should Private Equity Investors in Manufacturing Companies Respond?

The Covid-19 black swan has a new sibling: Vladimir Putin. The unprovoked actions carried out in Ukraine have had rippling effects around the world, inflicting physical, mental and emotional wounds, with the ensuing humanitarian crisis emerging at the forefront. Of lesser importance, though still a direct economic consequence of this ongoing crisis, is the persisting uncertainty of the global supply chain. Subsequently, raw materials and energy supplies will now be restricted causing further upward price pressure on everything from wheat to widgets.

In 2021, it was possible to pass on higher costs to customers given the inflation on input costs, labor shortages, supply bottlenecks and unpredictable demand that was driving rapid business lifecycles. De facto, a lot of businesses were seeing little price elasticity. In the later part of 2022, however, we expect volumes beginning to decline as the pent-up demand begins to wane. In parallel, the Federal Reserve is anticipating up to seven interest rate increases during the year, so businesses must prepare for inflation being tamed, and potential price decline, or deflation. Together, these factors will put significant pressure on EBITDA and cash flows. Particularly manufacturing companies owned by PE will see the full impact of elevated costs, and must quickly address direct manufacturing, procurement, and distribution and logistics costs, especially those that will eventually decline or revert with the market.

Let's look at an income statement today versus what it may look like in six months given the current inflationary trends and geopolitical uncertainties:

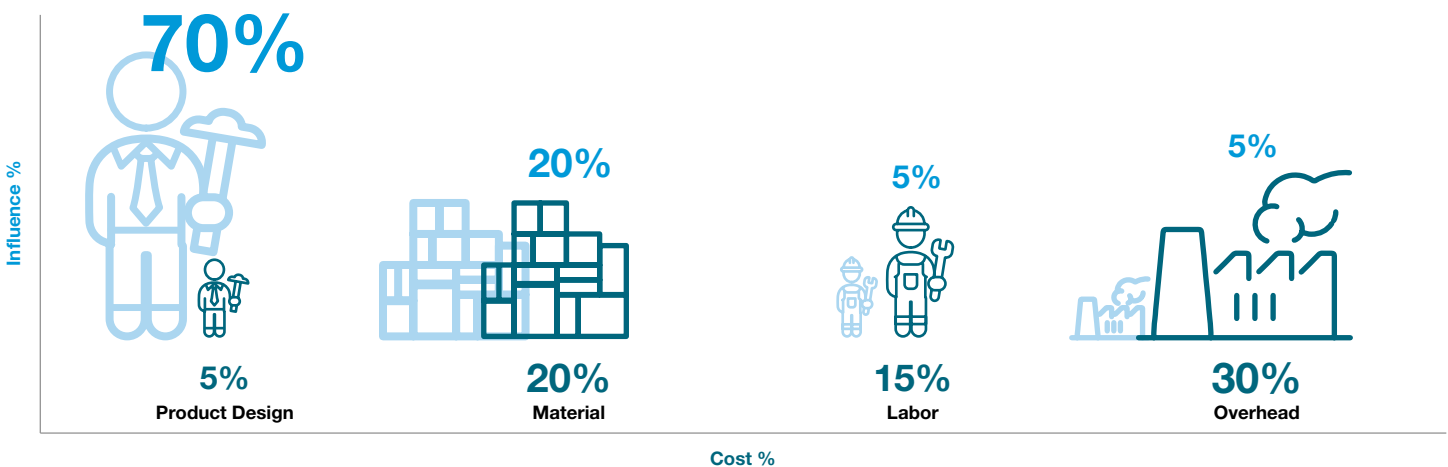
	P&L today		P&L in 6 months	
Units	220	-5%	209	Volume drop
Price/unit	\$0.59	-10%	\$0.53	Price concessions
Gross Revenue	\$130		\$111	
Freight charge	\$7		\$5	Drop of surcharges
Freight out	\$(8)	-15%	\$(7)	Ground transportation rates beginning to decrease
Net Sales	\$129		\$109	
Material	\$(36)	5%	\$(38)	Raw materials & energy price increases
Manuf OH	\$(6)	10%	\$(7)	Energy prices
Labor	\$(17)		\$(17)	Labor rates flat
Freight in	\$(12)	-15%	\$(10)	Land & sea container cost beginning to decrease
Gross Profit	\$58		\$38	
Sales Expenses	\$(13)		\$(13)	Remaining flat (but increasing as % of sales)
G&A Expenses	\$(17)		\$(17)	Remaining flat (but increasing as % of sales)
EBITDA	\$28		\$8	-73%
Required Cost Pass Through			\$20	18%

Freight costs, which have seen a continual rise since 2020, are widely predicted to finally begin to relax in the fourth quarter. In contrast, labor rates that have also seen a significant increase since 2020, are expected to remain largely unchanged. Raw material commodity costs continue to rise as well and suppliers who put customers on allocation are salting this wound. So even if you can afford to pay the cost premium, you still may not get the volume you want to satisfy your customers' demand. Manufacturing overhead will continue to see upward cost pressure, from higher energy prices exacerbated by the current geopolitical situation. Selling, general and administrative (SG&A) costs are expected to remain flat in dollars but increase as a percentage of sales due to erosion of sales revenue.

The earnings before interest, taxes, depreciation and amortization (EBITDA) impact is shocking: -73 percent in the illustration above. Just to stay equal would require a price increase of 18 percent, something that is unfeasible in an environment with potential downward price pressure. So, what else can private equity portfolio companies do? In manufacturing businesses, the three most impactful levers to pull are redesign, automation, and re-shoring.

Redesign

The Cost of Goods Sold (COGS): direct labor, direct material and manufacturing overheads combined typically make up 50 percent or more of revenue. Below the gross profit line, in operating expenses are design engineering costs which typically make up five percent or less of revenue. Although small in cost, design engineering has the greatest influence on product cost. Decisions made in product development determine the types of materials, the geometric forms, the processes of assembly and even the place where products are produced. To effectively impact direct costs, private equity portfolio companies can examine their engineering designs by asking the powerful question, "What if?".



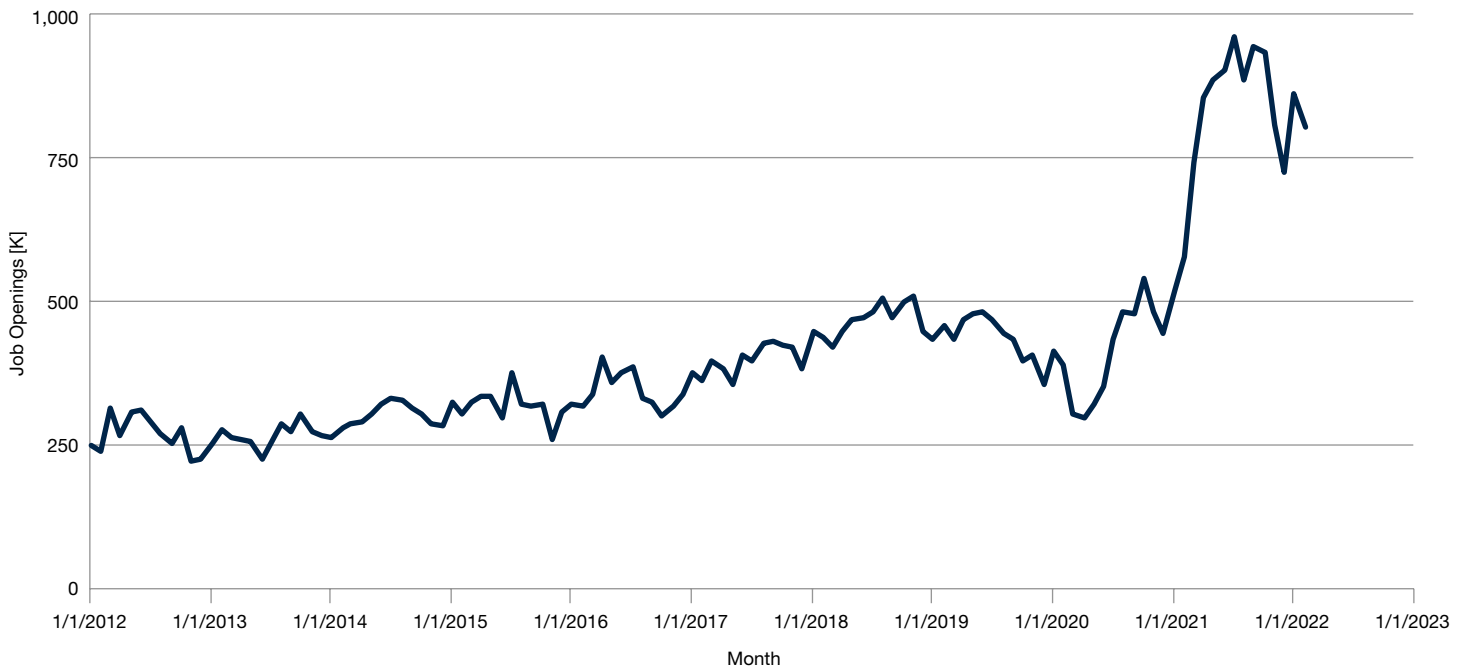
A typical cost reduction approach examines the individual components. Take, for example, a stainless steel bolt with full threads. If an engineer was asked to help reduce the cost of this component, a common response would be to change the material, reduce the threads or shorten the length. All of these ideas cheapen the component and potentially risk the quality and integrity of the brand.

The approach to how products are manufactured presents yet another opportunity for margin and inflation management. Based on resource or supply constraints during the New Product Development (NPD) process, considerations would be made as to how the product is manufactured, including the choice of machine centers, tooling types and overall process capabilities. If a product is launched and minimal resources are applied to continuous improvement and management, a manufacturer can leave margin on the table by not considering process and tool redesign. Although there's the mentality of "if it isn't broken, don't fix it," there often is an opportunity to improve efficiency whether that is direct material consumption (scrap reduction); direct labor productivity (increase uptime or output) and lastly, changeover/setup times (quick change tooling, single-minute-die-exchanges (SMED)). **Process redesign addresses margin management and can help combat inflation with the focus on "it's not what you made, it is how you made it."**

The better approach, the value analysis approach, is one that examines the functions of the components. Let's take again, for example, a stainless steel bolt with full threads, a fastener. Instead of asking how to reduce the cost of the fastener, let's ask, "What function does the fastener provide?" The basic function of a fastener is to join two parts. Now, let's ask, "What if we joined the two parts in a different way?" The ideas would be much broader, more creative and lead to value creation over cost reduction. Perhaps you riveted the parts together, or chemically adhered them together, or better yet, combined the two parts into one. These are the types of ideas that lead to value creation and cost savings of 15 percent or more and potentially reduce complexity and lead times.

Automation

If design ideas have been exhausted, another what-if question is: "What if we automate?" Automation used to mean significant capital investments in monument machinery which require large footprints to separate workers from the machine. Today, the cost has come down considerably, and co-bots (collaborative robots) can work side-by-side with human operators. There is a need to bridge the labor gap; there are roughly 13 million workers in manufacturing, yet over half a million job openings and The Institute for Supply Management (ISM) forecasts only one percent growth in the manufacturing labor force. Coupled with the Bureau of Labor Statistics (BLS) reporting unemployment rates increasing quarter-over-quarter (4Q21 at 3.2 percent and end 1Q22 at 3.6 percent) and steady turnover rates (5.6 percent - 7.3 percent), **automation presents a unique solution to fill existing gaps and develop a more reliable workforce for the long-term.**



Frequently, the hardest positions to attract and retain labor are the lesser-skilled, lower wage jobs. To fill this void, many manufacturing companies resort to temporary workers. Although lower wage roles, talent acquisition and placement services tack a premium onto already increasing wage rates, in turn increasing the cost of applied labor. These temporary/contracted employees can often come with performance management issues including frequent absenteeism and/or high turnover related to lower levels of company loyalty. For the remainder who stay, onboarding the new employees requires an initial investment in on-the-job training, often led by higher-skilled, tenured workers, diverting their attention off value-added customer work. The good news is these (lower skill) jobs are typically the easiest to automate. Because these positions are lower wage, justifying the capital costs can be challenging. However, these investments look much more attractive if you examine the return on the investment of the lost contribution margin due to line downtime caused by unfilled positions or inefficient untrained workers.

Although automation is often tied closely with the automotive industries, the demand is growing in non-automotive applications. The Association for Advancing Automation showed Q3 sales year-over-year (YoY) (2020 to 2021) increase by 37 percent in units sold with nearly two-thirds coming from non-automotive applications. A global supplier of healthcare packaging found a unique opportunity with end of line automation in the North American production facilities. High-volume assembly lines required 40-120 hours of lesser-skilled workers to manually pick and pack products from the end of a conveyor system (think Lucy from I Love Lucy on the chocolate assembly line) into final packaging. Through the installation of pick-place robotics, the manufacturer found significant gains on highly utilized production lines and high-velocity stock keeping units (SKUs), enabling a reduction in applied labor and an opportunity increase in machine feed rates for increased output. Through the identification of high-impact production lines along with partnering with known integrators and implementation specialists, the client commissioned 17 robots with an attractive return on investment (ROI).

By removing barriers in labor availability and associated noise, resource-drain of recruitment, retention and training of lesser-skilled positions, manufacturing teams can find significant gains in labor and machine productivity.

Automation is not only an investment in the manufacturing footprint but also an investment in the labor force, presenting the opportunity to upgrade existing talents to reinvigorate the manufacturing industry with high-impact and high-tech improvements.

Re-Shore (Near-Shore)

Another what-if question is, “What if we re-shore or near-shore production of components previously produced in North America?” The labor arbitrage that drove offshoring decades ago is not as attractive as it once was. The fully burdened labor rate in China is now about \$4.50 per hour. In Mexico, it is just under \$4.00 per hour.

The main risk considerations of manufacturing in China have traditionally been:

- Increasing labor costs
- Long lead times and extended supply chain, resulting in higher working capital
- Product quality concerns
- Current and potential tariffs
- Currency volatility
- Intellectual property theft
- Foreign policy
- Human Rights violations

Mexico addresses all of these risks through its proximity to the U.S., its pro-business environment and its general alignment to U.S. legislation and values. The total landed cost of producing in Mexico is likely to be much less than China and certainly less risky.

In addition to the labor cost business case is the changing consumer dynamic. Today’s consumer wants exactly what they want as fast as they can get it. In the past, customers accepted “plain vanilla” products. Today, they demand more than 31 flavors, with sprinkles. Chinese suppliers typically require large batch sizes that do not lend itself to today’s consumer preferences. In the past, some lead time was accepted whereas today, thanks to Amazon, consumers have much less patience. The fastest way to satisfy a large range of consumer wants and product needs is last-stage customization with final assembly and last-mile distribution in North America.

Recently, a global fortune 100 company worked through the supply decision described, with large, containerized exhaust systems for use with the generators at large U.S. datacenter sites. The exhaust systems were manufactured in China, shipped to the east coast of the U.S. where, upon arrival, were shipped to a local supplier for touch-up then shipped to the customer sites – a process that required 15 weeks from order to final delivery.

The initial decision to manufacture in China was based primarily on product cost. Difficulties such as communication between manufacturing and design teams, intellectual property (IP) concerns, quality concerns, or the extended lead time always existed, but were not significant enough to offset the reduced product cost versus North American manufacturing. However, the year-over-year erosion of the differential in manufacturing costs between China and North America, followed by the introduction of tariffs, then the supply chain disruption and volatility caused by Covid-19, coupled with increasing customer demands of shorter lead time (six to eight weeks) and increased product variability forced the team to consider reshoring back to North America, or face losing the business to competitors that had already made a similar transition.

Upon analysis, the product cost delta between China and North America no longer existed, making the decision to near-shore a straightforward one. Additionally, the more responsive supply chain resulted in better demand forecasting, and from a design viewpoint, it was much easier to collaborate with North American suppliers, who were in the same time zone and within easy travel distance, enabling engineering product cost out. The transition also enabled the company to reduce its carbon footprint, an increasingly important part of sustainability initiatives. Ultimately, the company opted to create supply chain resiliency and developed a manufacturing source in both the U.S. and Mexico, while retaining the option to supply from China.

The time required to redesign, automate or re-shore is variable depending on scope complexity. Implementation time can range from a few months to multiple quarters. These manufacturing strategies are three of several levers to address the EBITDA impact of the higher than forecast inflation.

One of the causes of recent inflation is on the demand-pull side with demand rapidly outpacing supply. This was primarily caused by Covid-related pent-up demand, low interest rates and an increased money supply. The other cause is on the cost-push side with higher wages and higher energy prices. Some economists are calling today's inflation transitory while others are labelling it permanent. Regardless of which label, PE firms must act now in order for their portfolio companies to remain competitive and profitable.

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