

## Seeing round the corner



The COVID-19 pandemic has had the most significant economic and social impact on the world since the so-called 'Lehman' global financial crisis and economic downturn in 2008-2009. It may yet prove to be the most impactful since the great depression of the 1930s.

During that previous '08-'09 recession, I was the Chairman and Chief Executive Officer of 3M Co in Minnesota, USA. It's helpful to contrast these two difficult periods and translate the lessons learned from the Lehman downturn to the impacts of the COVID-19 pandemic. Something which has probably been forgotten is that we were then suffering another epidemic caused by the Influenza A, subtype H1N1 'Swine Flu' virus. That lasted from March 2009 until April 2010 while we were all busily distracted by the economic downturn. In the United States alone, there were about 60 million people infected by the H1N1 virus, with around 275,000 hospitalisations but, luckily, there were only 12,000 deaths, all tragic of course. Six hundred million people were infected by H1N1 worldwide.

In crises like these, there are always two primary forecasting challenges. The first is to understand how long an economic contraction will last, and the second is to know how deep it will go. In '08-'09, the difficult problem was to calculate the length of the contraction, while the easier part was to figure out how deep it would become. The opposite is the case in the COVID-19 contraction.

Because pandemics and epidemics are what engineers and physicists call 'diffusion phenomena', the mathematics is well understood and relatively predictable for a single disease outbreak. The curve of disease penetration in the population has the classic elongated 'ess' shape over time, and the number of active infections closely approximates a 'Normal' distribution (often called a Bell curve), with time on the horizontal axis. A single contained outbreak lasts about four and one-half months.

More difficult to predict is the compounding impact of secondary outbreaks – always likely – because they overlap and extend the duration of the pandemic. The rate of infection curve looks like multiple Normal distributions added together, not unlike the shape of the double humps on a Bactrian camel. We know the only way to prevent secondary outbreaks, pre-vaccination, is to restrict human contact in larger groups or to provide suitable PPE protection. Secondary, tertiary, or even further disease episodes will continue until an effective vaccine is found and a vaccination programme completed. Alternatively, we must wait until a state of 'herd immunity' is reached. That requires about 70% of the population to be infected with the disease. Hardly something for us to look forward to at the mortality rates we've been seeing. The safety of our employees and communities is paramount in these circumstances, and that has been an enormous focus for Smiths during the current pandemic crisis.

## Inventory control and cash collection in downturns

Health conditions apart, the big challenge over the next two to three years will be maintaining or improving a company's cash position. In typical soft economic downturns, those driven by normal cyclicity, cash generation usually gets better as the economy contracts, and end market demand falls. Why? Cash isn't needed to grow, inventory can be sold off, and receivables collected. Production line rates are cut to control inventory, so cost absorption decreases and operating income falls. Although EPS falls, cash generation is still strong in mild downturns. However, in severe downturns like the one in '08-'09, it's a very different proposition. Cash generation can be much weaker because demand falls sharply, so liquidating inventory is difficult, and debtors may be unable to pay. It's why companies must take vigorous countermeasures to these problems early and why it dictates companies do nothing which can upset, temporarily or otherwise, their cash-flow.

## Supply chain demand transients

But it can get much worse. These situations are highly dynamic. Depending on the length of the supply chain, demand falls much faster than the end markets as each step in the supply chain overcompensates for falling demand and amplifies its effect. This is sometimes called the Forrester Effect. Demand contraction is much worse than economic forecasts suggest. To give readers an idea of scale, this transient amplification factor is about 3.0-4.0 for typical industrial companies. So, if the end market falls by 10%, this exhibits itself as a 30-40% fall at the OEM level. A staggering loss of demand to deal with. The same phenomenon occurs when markets recover, except demand then overshoots, as new inventory is being built.

The next question is, how long will this amplified fall in demand last? The answer depends on the efficiency of the supply chain. A 100% efficient supply chain will clear excess inventory in one turn. But no supply chain is ever 100% efficient. If it were a more practical 50%, the excess would be removed in two turns etc. For an industrial company with three or four inventory turns annually, these effects might last for six months to one year.



Meanwhile, it feels like the company is selling into a market much worse than the GDP or IPI numbers suggest. Financial planners need to consider these dynamics, not just the GDP or IPI averages. And when cash generation is under pressure, the transients can be the difference between a company's strength and a company's struggle. In any real-life structure or system, it's the point loading that causes failure, not the average. So it will be with a company's cash management.

### What will happen to Smiths individual reporting segments?

As I mentioned a couple of years ago, Niels Bohr once said that "forecasting is difficult, especially when it concerns the future". Nevertheless, no matter how difficult it is, companies are obliged to give the best advice they can to investors about the future as they see it.

Luckily, Smiths has a wide range of end markets and it is this diversity which helps limit volatility to some degree. Pure-play companies often grow faster than conglomerates in expanding economies, but conglomerates are usually better performers in downturns because their risks are more widely spread. In 2009, the US automotive OEM component market fell by 50%, while the automotive aftermarket fell by only 4%. People still drove cars and had accidents that needed to be repaired, and vehicles experienced wear and tear. Discretionary consumer electronics fell by 80%, but the industrial electronics market only lost 9%, very much in line with the shrinking GDP number. In 2009, in the healthcare field, discretionary orthodontics demand fell by 10%, while the dental market dropped by only 2%.

In contrast, medical supply increased by 4%, because people can't choose when they get sick. For completeness, food staples fell by 0.5%. So, you can see the wide variability of end market demand contractions, even inside conglomerates.

Smiths largest markets are in airport and airline security, oil & gas, aerospace and the medical segments. All these markets will contract, except medical, which is still doing well. The aerospace industry, including airlines, will be the worst affected, and by most estimates will take four or more years to recover fully. While holiday and incidental travel are likely to rebuild reasonably quickly, an anticipated fall in business travel is expected to cause a slow recovery for the airline and associated industries because this is where their profits are the largest. There is also worrying evidence that long haul flights are a source of infection clusters via aerosol transmission and this is bound to elicit caution.

This isn't the complete picture for Smiths by any means, because we service other smaller markets in defence, telecommunications, construction and medical capital equipment, significantly spreading the risk. Moreover, we have invested heavily in innovation and, though progress has been slower than we would like, in time it will enable us to take market share and provide above-market growth. On the other hand, we are not immune to demand perturbations in the markets we serve.

The most significant strategic decision we've taken in the last six months is to postpone the separation of our Medical business. The most urgent challenge was to deal with the COVID-19 pandemic and all that it implies, both in end market demand, employee safety, supply chain challenges and cash management, etc. You can imagine the enormous demands on management and Board time as we wrestled with the vicious COVID-19 tiger. The number of Board level meetings tripled, and management meetings quadrupled, all dealt with using the newly emerging video conferencing and collaboration tools. Outside of our factories, most of it done working from home in roughly 20 different time zones across the world.

The challenge a company faces at times like these is to understand whether, figuratively, they are falling off a 4,000-foot cliff or just into a 4-foot ditch. And you don't know which until you reach the bottom. Prudence, therefore, dictated we postpone the Medical business separation and focus our efforts on managing the impacts of COVID-19. In any event, capital markets were uncertain and cash was tight or unsure. We did this until the effects of the pandemic became more transparent and the economic environment more stable. Unfortunately, COVID-19 and its economic effects are not finished with us yet.

### When might stability return?

The 'main event' on the pandemic stage is developing an effective vaccine, ramping up manufacturing capacity to meet global demand, and completing a worldwide vaccination programme. Even then, confidence needs time to build before people act more positively at home or work, creating needed demand. Almost certainly, immunity will not be 100% and will need to be boosted periodically, just like winter flu and tetanus shots. Undoubtedly some people will even refuse vaccination on principle. The US Government has placed orders with us for around 80 million hypodermic syringes and has contracted for vast amounts of vaccine doses from pharmaceutical companies. When might all that be in place?

There are reputed to be hundreds of vaccine development programmes underway worldwide for COVID-19 with thirty at an advanced stage. At the time of writing, scores of thousands of people are involved in phase 2/3 clinical trials across the world. The UK Secretary of State for Health has said he does not expect a vaccine to be available until 2021, though other countries are more optimistic. We have already experienced the challenge of COVID-19 testing, so administering billions of vaccination shots will inevitably run into problems. Any delay there will produce delays in economic recovery. An educated guess is the vaccination programme will not be completed until late summer or possibly autumn of 2021. It's only after this point that we can begin to think about a gradual, and perhaps still extended return to economic normality, whatever 'normal' means. GDP cycles are – please forgive the mathematics speak – sinusoidal, so are 'soft bottomed'. And IMF forecasts are suggesting a much slower return to normal than had hitherto been thought.

### Economics

The IMF forecast for the UK economy in 2020 is a contraction of 10.2% and for the US a fall of 8.0%. These are equivalent year-over-year GDP swings of about 13% and 11% respectively. Recognising that the first calendar quarter of 2020 was unaffected by COVID-19, correcting for the full-year effects would make the year-over-year swing around 16% and 14% respectively. Unemployment rates will lag GDP but will reach similar levels if income support is not renewed, and we should fear this more than anything. These numbers are almost 50% larger than the contraction we saw in 2009, so 2021 and possibly 2022 and beyond are going to be very difficult economically. It's like having the entire Chinese economy removed from the world economy. This recession is going to hurt – and for some time.

There is a simple rule in economics which states that 'if there are no buyers, then there will be no sellers'. In other words, it's all about demand and, therefore, it's about government stimulus packages, unemployment support and the consequent timing and strength of a recovery. If governments do not act decisively, there is the prospect of high unemployment and potential problems with poverty, hunger, social unrest, and falling prices. Not even rich governments can afford to support significant numbers of their population very long. So, getting the various economies back to work is essential.

### In conclusion

2021 will be another challenging year economically, and it will probably take several years to recover to the same economic level as 2019. So, for now, prudence will be the order of the day in managing Smiths. However, we've seen that the winners in this COVID-19 downturn are the innovators. It's been the innovators in health care (Astra Zeneca, Pfizer etc.), electronics (ARM) and communications (Teams, Zoom, Vido), in delivery systems (Amazon), in grocery supply (Ocado), and in consumer goods (Reckitt Benckiser) who have done well in this pandemic. So it will be in the future. Right now, innovation is the cheapest and fastest way to change the future.

Rapid innovation is straightforward in electronics, software and service. However, in some areas of heavy manufacturing even great engineering companies like Rolls-Royce, through no fault of their own, have been hurt by a narrow focus on air transport and their long-term, high capital development needs. Similarly, so for Boeing and Airbus. Giant oil and gas companies are equally challenged, as are many mining companies. Economics does not treat companies with long development cycles very well.

Finding new profitable growth will be much more challenging for the next few years than it has been previously. But as Smiths innovation programmes begin to bear more fruit – and it is still early days in that regard – we are better positioned than many industrial companies. Prudence remains the immediate order of the day, together with careful cash management and innovation. These are the recipes for survival and success. Innovation is where we need to execute better and faster.

Thank you for maintaining your support of Smiths in this challenging time for all. It is very much appreciated.

**George W Buckley**  
CHAIRMAN

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