Chips off the menu; a new kind of industrial policy is required

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As the UK's automotive manufacturing sector copes with the administrative burden of Brexit (fortunately without tariffs and with no limits, as yet, on EU market access) and emerges from COVID-induced economic slowdown, the lack of semiconductors (chips in common parlance) is hitting the industry where it hurts – in its supply chain run on just-in-time principles. Global forces are having as big an impact on UK production as any Brexit-induced shocks have had to date.

Modern automotive manufacturing relies on minimal stock levels (saving on working capital tied up), and not just at the assembly plants. The same rule applies throughout the global supply chain; most of the chips the industry are assembled into modules delivered by tier 1 suppliers. In recent years the Japanese tsunami and Thai floods have exposed the fragility of this system; in the immediate aftermath of the tsunami, the sole supplier of black paint pigment was out of action. Henry Ford's famous statement along the lines of "you can have any colour so long as it's black" suddenly needed rewriting. Now chip supply shortages mean that cars are being delivered without all the features consumers might have ordered: the Peugeot 308 for example has gone back to conventional mechanical (non-digital) dashboard displays for example.

Last year, as the worst of COVID kept production lines shut, car companies drastically reduced their planned production volumes and so cut back on component orders, including chips. The chip companies were actually quite relieved as this freed up capacity to meet the burgeoning demand from the tech sector – already its biggest customer. Demand for phones and laptops surged during peak COVID but when automotive demand turned out to have dipped less than the vehicle companies had expected and they want to restore supply volumes, the chip suppliers could not oblige, having allocated production to the far more profitable and higher volume tech sector.

The result? Supply chains and production schedules in chaos as car company managers coped with unpredictable deliveries of chips, either directly to their plants, or to their suppliers and decided which vehicles should be built and which delayed. All over Europe and the US there are now incomplete vehicles in factory car parks, awaiting one or more electric modules; at Sunderland earlier this year, Nissan stopped building Jukes so it could complete all the planned Qashqais of the outgoing model but switching to the new model this month. Production at JLR's Castle Bromwich has ground to a halt, with chips allocated to more profitable Range Rovers made at Solihull. Ford's factories across Europe are, with the exception of the Romanian factory, on production slowdowns or entirely stopped; the ever popular Transit van will become less prominent on UK roads as the Turkish factory which makes it is due to remain closed until August.

According to Alix Partners, the chip crisis is expected to "cost" the industry over US$110m in lost revenue in 2021, close to double the loss it predicted just four months ago; it would not be a surprise to see that forecast increase again next time they report. IBM and others think the shortage will last in 2022, or possibly 2023. President Biden has set up task forces to advise on how US supply chains can be made more resilient, for which read – how quickly can chip production be re-located to the US? And the EU is reportedly doing the same. Some companies, Bosch, Infineon and TSMC (the Taiwanese company which dominates the sector) are all expanding US or European chip production or will confirm plans to do so in due course. The situation is so serious that one Daily Telegraph commentator even suggested that the UK government should establish a UK chip

industry, using the government's recent "establishment" of the UK vaccine manufacturing sector as justification.

The market may well find its own new balance, but it may well equally be that governments will end up having to become much more closely involved with industry structure and competitor dynamics in the chip sector, and others. Industrial policy is likely to become vogue again, but rather than picking winners, this time it will need to focus on understanding the critical stages or processes in industry as a whole. What is critical to the efficient or effective operation of the economy needs to be much better understood by policy makers than it is or has been until now. And that same rule applies to the equally significant area battery production and its supply chain, something to which I shall return before long.