LSE European Politics and Policy (EUROPP) Blog: Europe's call for semiconductor factories: A solution in search of a problem?

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Europe's call for semiconductor factories: A solution in search of a problem?

Supply chain bottlenecks and chip shortages for the car industry have led to calls for Europe to develop its own semiconductor capacity. But splits have already emerged between those who support the idea and those who think Europe should stick with what it does well. **Bob Hancké** *takes stock of what is not said in the debate.*

Semiconductors – also known as computer chips – appear to be permanently in the news today. The big shifts in industry and related services that are captured under the heading *Industry 4.0*, the (slow but increasingly faster) shift towards AI-based products and services, the now probably irreversible turn towards electric vehicles that require a lot more electronics, and a variety of other shifts in geopolitics, product market strategies and organisations have significantly increased demand for chips just at the moment that their supply has dried up because of Covid-19, other cyclical events and dark clouds over free trade between Asia, which produces the lion's share, and the rest of the world.

Small wonder, then, that many raise the need for Europe to build its own semiconductors in Europe to increase its strategic autonomy. While some of the problems may be cyclical, others, such as the dark clouds over Asia's status as the workshop of the world, seem to have taken on a more long-term menacing character.

Semiconductor manufacturing is a sector with several features that potentially make it one of the few areas where Europe could thrive. It combines high value-added products, the need for high-quality design and production, high workforce skills, and they have to be made in complex manufacturing settings (so-called 'clean rooms'). As such, the idea of developing this sector in Europe is therefore not wrong.

Comparative advantage and opportunity costs: Back to the future?

But a few – deeper – counterarguments are often ignored by the neo-dirigistes. First, what often goes unmentioned is that 'strategic autonomy' must also imply a reduction in trade, away from the finely honed specialisation and comparative advantages that Europe and the rest of the world with which it trades have built over the past seventy years. Autarky is very rarely a sensible idea in a deeply integrated world, neither is import-substitution (the Soviet bloc ran on that idea…), and governments are, on the whole, not very good at picking winners.

Secondly, and related, we are where we are for a reason. It might be good to have a strong semiconductor industry, but that is a lot easier if you start out with one. Building one now, after several decades of (benign) neglect because imports were cheap and secure, is a much tougher job if you weren't there in the first place (i.e. back in the 1970s). Not only is such an industrial policy project likely to cost a lot of public money; it would, at best, probably only have the effect of getting even with the rest of the world, not getting ahead of the curve.

Perhaps a discussion should also be had about how such a sectoral policy ought to consider a wider range of possible industrial policy projects that are not funded because of the earmarked millions for pulling even with Taiwan and Korea in semiconductor production. In sum, the clamours for a European semiconductor industry are (and remain), therefore, tinged with a flavour of fighting yesterday's battles – and ignoring tomorrow's as a result.

Europe's inferiority complex

But there is a broader problem here. In the area of innovation more generally, Europe has developed a massive inferiority complex over the last few decades, often unnecessarily so. In the early and mid-1990s, European politicians often lamented the absence of a European Microsoft or Apple and expressed deep concern over the advantages that Silicon Valley and Route 128's biotech sector conferred onto the United States in global competition. Innovation, so it seemed, would pass Europe by.

Interestingly, though, a few years earlier, policy makers and academics in the US were wondering about the secret of European industry's success – not least at MIT, with its classic study of American manufacturing in 1989 and Lester Thurow's 1993 *Head to Head*. In fact, in the wake of the Democratic victory in 1992, Clinton's Secretary of Labour Bob Reich called for an examination into workers' participation schemes modelled on German co-determination because of its beneficial combination of efficiency and equality.

The deficit in biotech, in turn, morphed into a significant advantage by the late 1990s, when companies throughout the continent began to carve out new, stable (and very lucrative) niches in a now much more mature biotech sector, built, for example, on diagnostic tools rather than upstream synthesis or downstream therapeutics. Again, a sensible international division of labour that played to Europe's strengths by innovating on the back of what others have done.

Two types of innovation in the EU

The recurring calls for a strong presence in cutting-edge technology sectors ultimately reflect an uneasy balance in the EU itself, fed by Europe's politicians' naïve fear of missing out (FOMO). Somewhat schematically, the EU embodies within it two very different traditions of innovation and innovation policies.

In one corner is France, where innovation almost always takes the shape of a 'mission' that can only be fulfilled by a strong government with targeted plans – but often at the expense of other industrial policies. 'We can make the Ariane [space missile – BH], but we can't make washing machines', one of the more astute observers of French economic policy complained in the late 1980s. This dirigiste understanding of innovation, with echoes today in Mariana Mazzucato's approach to the issue, boasts a long list of successes: high-speed trains, aerospace, armaments, and nuclear energy, for example. So, if you think building computer chips is like space travel (take a moment to ponder the analogy), only government, in this case the EU, can solve the problem.

The other corner is populated by Germany and many of the small north-west European economies. Politicians, academics, and business leaders may ponder the deficits of the German-style economic model and innovation system, but export statistics and case studies tell a different story. In one sentence, Germany has not become one of the leading global exporters by chance. Circumstantial support may have been available through an undervalued euro or clever trade policies, but the way things are done in the country certainly played a role as well.

Furthermore, innovation in Germany frequently takes a different shape than what outsiders think it should be (the Microsoft syndrome mentioned earlier). Innovation in this part of Europe is built on a deep understanding of technology, from the CEO to the shopfloor worker; on the ability of all these to anticipate the needs of their long-standing customers to customise high value-added niche products; and on a training system, again from the shopfloor to the CEO, that is organised around technical knowledge within this 'relational' organisational model. It builds on incremental upgrading, carrying everyone along: trained workers, suppliers, and customers.

Northern European success in innovation and trade

Those who think this incremental innovation model is no longer viable in today's world haven't been paying attention (as Krugman would say). German is a world leader in manufacturing sophisticated cars, trucks and other transport systems, machine tools, and pharmaceuticals. Ditto for the surrounding economies, which have become de facto extensions of Germany in the single market – Belgium, the Netherlands, Denmark, Austria, and Switzerland. These countries also lead in specialised business services including software, and as mentioned earlier, in adapting radical innovations in biotech to meet new market demand.

No one suggests that this way of doing things doesn't face challenges, but that is also true of more radical forms of innovation (we only see the winners after all, but many start-ups never even make it to the market). And, in principle at least, being able to build on the sophisticated abilities of engineers, workers, and suppliers in a decision-making model that invites all views to be aired, should make adjustment easier. The shift to automation, higher and new skills, and newly integrated manufacturing models expressed in the concept of *Industry 4.0* is a case in point. (It may be useful to point out here that this strategy built on innovating in small steps while keeping everyone on board is not without danger: the sunk costs in dedicated capital and specific skills, for example, make a rapid shift to emission-free cars less likely without careful accompanying measures).

Gallic ambition and Germanic angst

The EU, then, suffers from a combination of Gallic ambition and German FOMO, which makes the latter jump on the former's bandwagon. If you think Europe has a deep innovation problem, and if you think that it is a bit like putting someone on the moon, the EU is the solution. But if what I wrote above is correct, the EU's mission-style innovation is a solution in search of a problem.