

THEMATIC



Pierre BLANCHET,
Head of Investment Intelligence

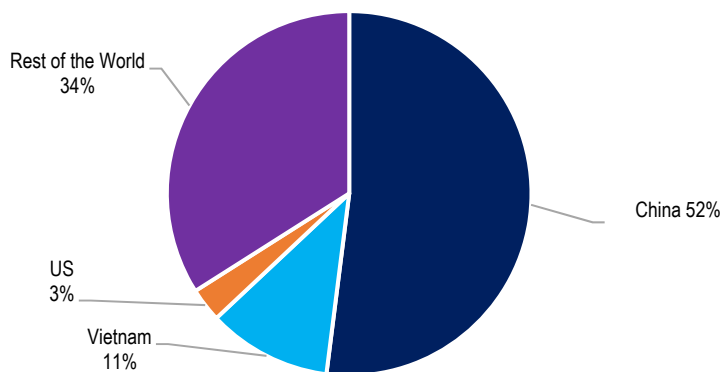
The price of self-sufficiency

The disruption of global supply chains has been a wakeup call for the European Union. For years, the principle of an open and free Single Market has led to a massive transfer of industrial production and outsourcing mainly to Asia. The Covid-19 crisis showed that Europe’s dependency was higher than most political leaders and decision makers would have imagined and could lead to greater disruption with sometime deadly consequences. It has become crucial to ensure at least some form of self-sufficiency when it comes to critical products but the cost of independence might be much higher than expected.

Assessing Europe’s dependency, the Commission has identified 137 products for which the EU is highly dependent on external production, 34 of which are unlikely to be replaced (raw materials and oil for instance). That leaves more than 100 products in sectors such as healthcare,

electronics or chemicals. China represents more than half the value of imports of the most foreign-dependent products, followed by Vietnam, Korea, Singapore and Brazil with a much smaller value, while the US, the UK or Japan only accounts for 3% (see chart 1).

1/ Share of EU imports value of 137 dependent products



Source: EU commission, Amundi Research, June 2021

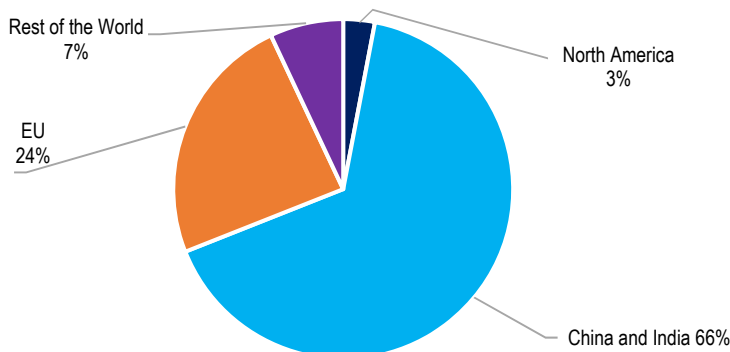
China represents more than half of foreign dependant products

Looking at strategic sectors, we can see extreme concentration in certain areas such as semiconductors and pharmaceutical products, with European dependency set to become more critical in a post-Covid world. Europe’s pharmaceutical industry boasts leading global players, but imports most of its active pharmaceutical ingredients (API) and excipients from India and China (see chart 2). Sole medicines are no longer produced in Europe due to cost pressure.

China holds a strong position in the supply chain of antibiotic, antiviral, anti-bacterial and anti-inflammatory medications. India is world leader in the central nervous system and respiratory segments¹. It is unclear though just how much it would cost to re-onshore the production of these drugs since the pharma industry is highly integrated. However, the impact on end customers would be higher prices if they were made in the EU.

¹ Source: COMMISSION STAFF WORKING DOCUMENT. Strategic dependencies and capacities. Updating the 2020 New Industrial Strategy: Building a stronger Single Market for Europe’s recovery.

2/ API production worldwide



Source: CPGA report 2015, Amundi Research June 2021

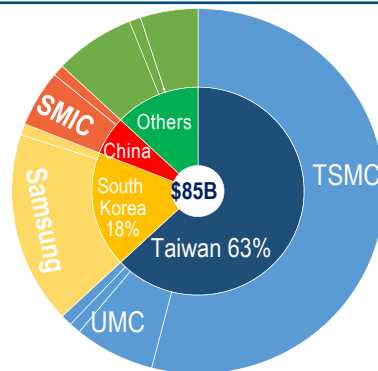
THEMATIC

There are at least three different ways to deal with dependency issues. One is to diversify the sources of supply. Another is to build inventories, or to create (recreate in many cases) production capacities within the EU. The cost vs risk vs benefit is obviously not the same. Building inventory might not be possible in some cases such as perishable goods and ever-evolving technologies, or simply doesn't make sense in the case of software for instance. Diversification of sources doesn't entirely solve the issue. Europeans will still rely on a third party willingness to deliver what is needed which in the case of a global pandemic like Covid-19, might not be possible. Consequently, the on-shoring of highly dependent but critical production is the safest way, but might not be an easy or cheap journey.

Let's take the example of digital sovereignty. As Thierry Breton² points out, it requires "an autonomous European capacity in microelectronics" meaning Europe would have to be self-sufficient in the manufacturing of semiconductors. This sector has a very complex supply-chain with many players involved in design, lithography, manufacture (foundry) or distribution. Yet, when it comes to the production of chips, it has all the characteristics of an oligopolistic commodity market with a very small numbers of players (see chart 3), namely Taiwan, Korea and China... and very high barriers to entry (technologic edge and mass production capabilities). Moreover the region is subject to high seismic activity and political tensions

² European Commissioner for the Internal Market

3/ 2020 Total foundry revenue and market share



Source: TrendForce, SIA, Amundi Research, June 2021

The world relies on Taiwan and Korea for leading edge semiconductors

The European share of the €380 billion (\$440bn) global semiconductor market is less than 10% in value, down from 44% in 1990. **The European Commission's ambition is to reach 20% by the end of the decade** (in line with its share of end users demand³). Today chips produced in Europe are mid-range (20 nm and above) mainly used in the auto industry, but there are no cutting edge semiconductor foundries, which are necessary for products such as mobile devices or self-driving cars. The challenge is thus not only to ramp up production capacities in Europe but also to upgrade manufacturing sites. Both require significant investments, a long-lead R&D strategy and talented engineers. TSMC (Taiwan) and Samsung (Korea) are currently the only manufacturers able to produce nodes below 7nm while customer demand will rise over the next 3 years for 5G and AI⁴. Europe can rely on the global lithography leader ASML but that's only one piece of the puzzle. Despite public support, it is not certain that European players will be able to reach Taiwan's leading production

capabilities on a profitable scale even 10 years from now. To put things into perspective, leading players have invested from \$10bn to \$20bn per year over the past decade (see chart 4). In April, TSMC announced a 3-year \$100bn capex plan to cope with strong client demand (Apple, Qualcomm, and Nvidia). This followed Intel's announcement of an additional \$20bn investment in two new plants in Arizona and Samsung's \$100bn capex over the decade.

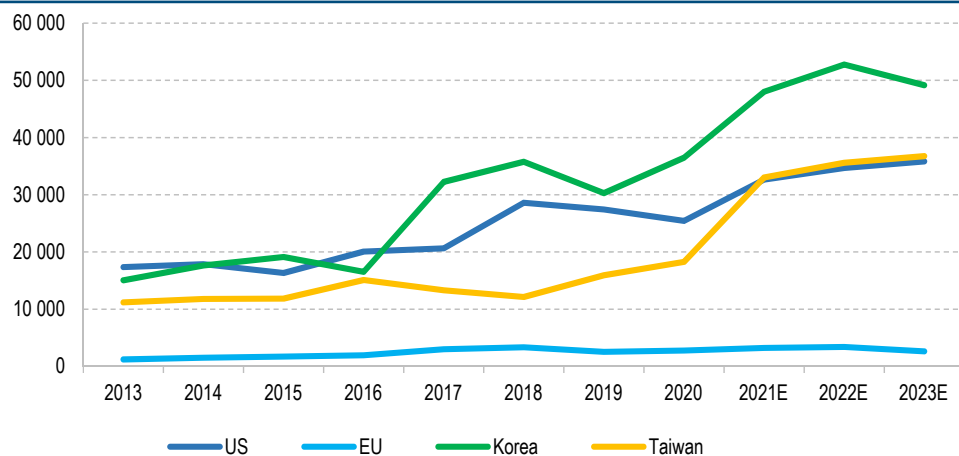
To have any chance of reaching 20% market share including cutting edge foundry capabilities in order to ensure self-sufficiency and strategic independence by 2030, **Europe needs to invest from €300bn to €400bn in public and private sector money** over the decade (see chart 5). That would go on top of the upfront €20bn to €40bn cost of building the plants. For comparison's sake, the entire Next Generation EU budget for the digital transformation and innovation is €143bn over 6 years. Assuming there is enough public and private sector funding to reach the production goal, and that European

³ Source SIA and BCG April 2021

⁴ TSMC 2020 Annual Report

THEMATIC

4/ Semiconductor Capex by Top Spenders (\$MM) (Logic, DRAM, Foundry, NAND)



Source: UBS, Amundi Research, June 2021

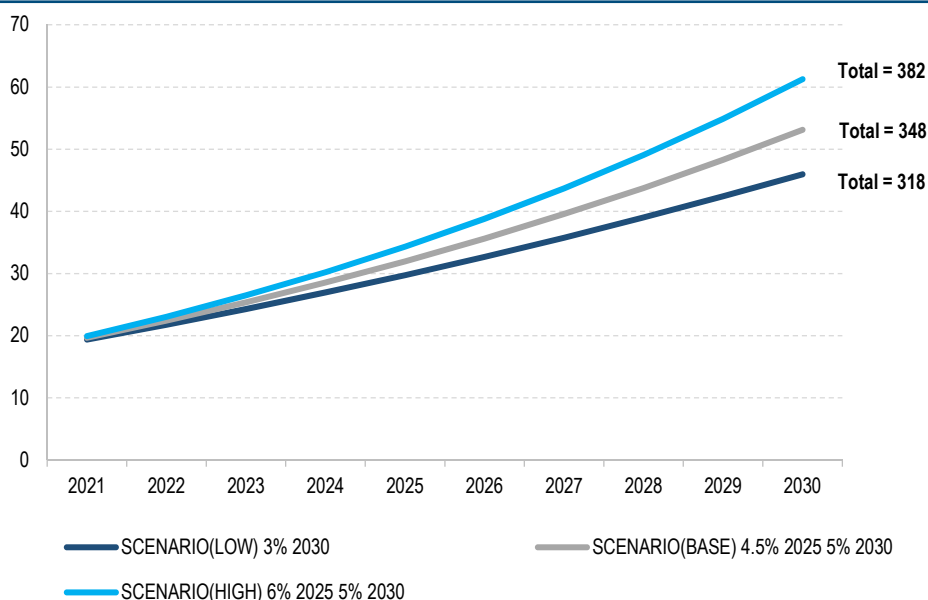
Self sufficiency means higher inflation

engineers are able meet this R&D and production challenge, it is unlikely the marginal cost will be smaller than that of the northern Asian foundries. That means government subsidies or taxes on imports

will probably be needed, at least on certain categories of imported chips, to ensure that EU semiconductor manufacturers gain market share and reach critical mass. This is inflationary in nature⁵.

⁵ A hypothetical alternative with parallel, fully "self-sufficient" local supply chains in each region to meet its current levels of semiconductor consumption would have required at least about \$1 trillion in incremental upfront investment, resulting in a 35% to 65% overall increase in semiconductor prices and ultimately higher costs of electronic devices for end users." Strengthening the Global Semiconductor Supply Chain in an Uncertain Era, Boston Consulting Group, June 2021

5/ Annual EU R&D and CAPEX expenditures projection (€, billion)



These scenarios are based on 2020 semiconductors industry sales of \$440 billion (€380 billion according to the SIA). We assume an upfront cost of €20b. We then assume European industry total R&D expenditures of 20% of revenues and total Capex of 25% of revenues. The annual semiconductors market sales growth until 2030 is defined as low, base and high: low case assumes a 3% growth per annum, base case assumes a 4.5% growth per annum, high case assumes a 6% growth per annum.

Source: Amundi Research

Europe's response to the Covid-19 crisis is a legitimate call for self-sufficiency in strategically dependent sectors. In the

case of electronic components, the EU can mobilize industrial stakeholders to design a European Flagship project in

THEMATIC

the form of a second Important Project of Common European Interest (IPCEI). The first IPCEI has already collected €8bn plus around €5bn of public and private sector money for R&D⁶. In total, the EC believes that it can collect €20bn to €30bn⁷. Part of the Recovery and Resilience Fund will be allocated to this project. Still, that might not be enough to achieve the ambitious goal of 20% market share. The EU can also ask its partners - starting with the US - to build manufacturing capacities in Europe. But that comes at a cost. According to recent talks between the European Commission and Intel, the US chipmaker is asking for an \$8bn dollars welcome check to build a plant in Europe⁸.

The implication for investors is twofold: (1) long term investment opportunities in these strategic sectors, backed by public sector funding and (2) distorted marginal production costs contributing to higher inflation.

Instead of pursuing a self-sufficiency through uncertain large industrial plans, Europe could strengthen its supply chain resilience, reach minimum autonomy in highly critical segments such as defense and security or aerospace, and use public money to support R&D and own intellectual property.

In reality, the price of self-sufficiency might be much higher than political leaders and taxpayers are ready to pay.

Finalised on 25 June 2021

⁶ *Thierry Breton to CCFA and Les Echos 28 April 2021*

⁷ *Thierry Breton to Le Monde 25 April 2021*

⁸ *"Intel seeks €8b in subsidies for European chip plant", Politico, April 2021*

Amundi Research Center



Find out more about
Amundi publications
research-center.amundi.com

Emerging Private Equity
Money Markets Find Monetary
Foreign Top-down Policies
Exchange Corporate Equities Bottom-up
Sovereign Bonds Forecasts
ESG High Yield Real Estate
Quant Investment Strategies Asset Allocation

DISCLAIMER

This document is solely for informational purposes.

This document does not constitute an offer to sell, a solicitation of an offer to buy, or a recommendation of any security or any other product or service. Any securities, products, or services referenced may not be registered for sale with the relevant authority in your jurisdiction and may not be regulated or supervised by any governmental or similar authority in your jurisdiction.

Any information contained in this document may only be used for your internal use, may not be reproduced or disseminated in any form and may not be used as a basis for or a component of any financial instruments or products or indices.

Furthermore, nothing in this document is intended to provide tax, legal, or investment advice.

Unless otherwise stated, all information contained in this document is from Amundi Asset Management SAS and is as of 29 June 2021. Diversification does not guarantee a profit or protect against a loss. This document is provided on an "as is" basis and the user of this information assumes the entire risk of any use made of this information. Historical data and analysis should not be taken as an indication or guarantee of any future performance analysis, forecast or prediction. The views expressed regarding market and economic trends are those of the author and not necessarily Amundi Asset Management SAS and are subject to change at any time based on market and other conditions, and there can be no assurance that countries, markets or sectors will perform as expected. These views should not be relied upon as investment advice, a security recommendation, or as an indication of trading for any Amundi product. Investment involves risks, including market, political, liquidity and currency risks.

Furthermore, in no event shall any person involved in the production of this document have any liability for any direct, indirect, special, incidental, punitive, consequential (including, without limitation, lost profits) or any other damages.

Date of first use: 2 July 2021.

Document issued by Amundi Asset Management, "société par actions simplifiée"- SAS with a capital of €1,086,262,605 - Portfolio manager regulated by the AMF under number GP04000036 - Head office: 90 boulevard Pasteur - 75015 Paris - France - 437 574 452 RCS Paris - www.amundi.com

Photo credit: ©MDelporte - iStock/Getty Images Plus - Thongkoch Chutpattarachai

Chief editor

BLANQUÉ Pascal, *Group Chief Investment Officer*

Editor

DEFEND Monica, *Global Head of Research*

Deputy-Editors

BLANCHET Pierre, *Head of Investment Intelligence*

BOROWSKI Didier, *Head of Global Views*

With Global Research contributors

AINOUZ Valentine, *Deputy Head of Developed Markets Strategy Research, CFA*

BERARDI Alessia, *Head of Emerging Macro and Strategy Research*

BERTONCINI Sergio, *Senior Fixed Income Research Strategist*

BLANCHET Pierre, *Head of Investment Intelligence*

BOROWSKI Didier, *Head of Global Views*

CESARINI Federico, *Head of DM FX, Cross Asset Research Strategist*

DROZDZIK Patryk, *Senior EM Macro Strategist*

GEORGES Delphine, *Senior Fixed Income Research Strategist*

HERVÉ Karine, *Senior EM Macro Strategist*

HUANG Claire, *Senior EM Macro Strategist*

PERRIER Tristan, *Global Views*

PORTELLI Lorenzo, *Head of Cross Asset Research*

USARDI Annalisa, *Senior Economist Cross Asset Research*

VANIN GREGORIO, *Cross Asset Research Analyst*

VARTANESYAN Sosi, *Senior Sovereign Analyst*

With the Amundi Insights Unit contribution

BERTINO Claudia, *Head of Amundi Investment Insights Unit*

CARULLA POL, *Amundi Investment Insights Unit*

FIOROT Laura, *Deputy Head of Amundi Investment Insights Unit*

DHINGRA Ujjwal, *Amundi Investment Insights Unit*

PANELLI Francesca, *Amundi Investment Insights Unit*

Conception & production

BERGER Pia, *Research*

PONCET Benoit, *Research*

Document for the exclusive attention of professional clients, investment services providers and any other professional of the financial industry