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Digitalizing and greening GVCs: what does the future hold ?

Digitalizing and greening GVCs: what does the future hold ?

- Europe's Future Agenda: Green & Digital
- But Trade-offs will need to be made
- Example: The EU Chips Act (announced September 2021)
- **Problem** : currently the EU has GVC problems, not just in medical supplies but in critical production inputs like Chips (semi-conductors) which seriously delays production of cars, electrical appliances, phones, electrical bycicles, …
- **Outcome**: these delays in EU production may jeopardize the EU's digital agenda, negatively impact competitiveness etc.

Content of Talk

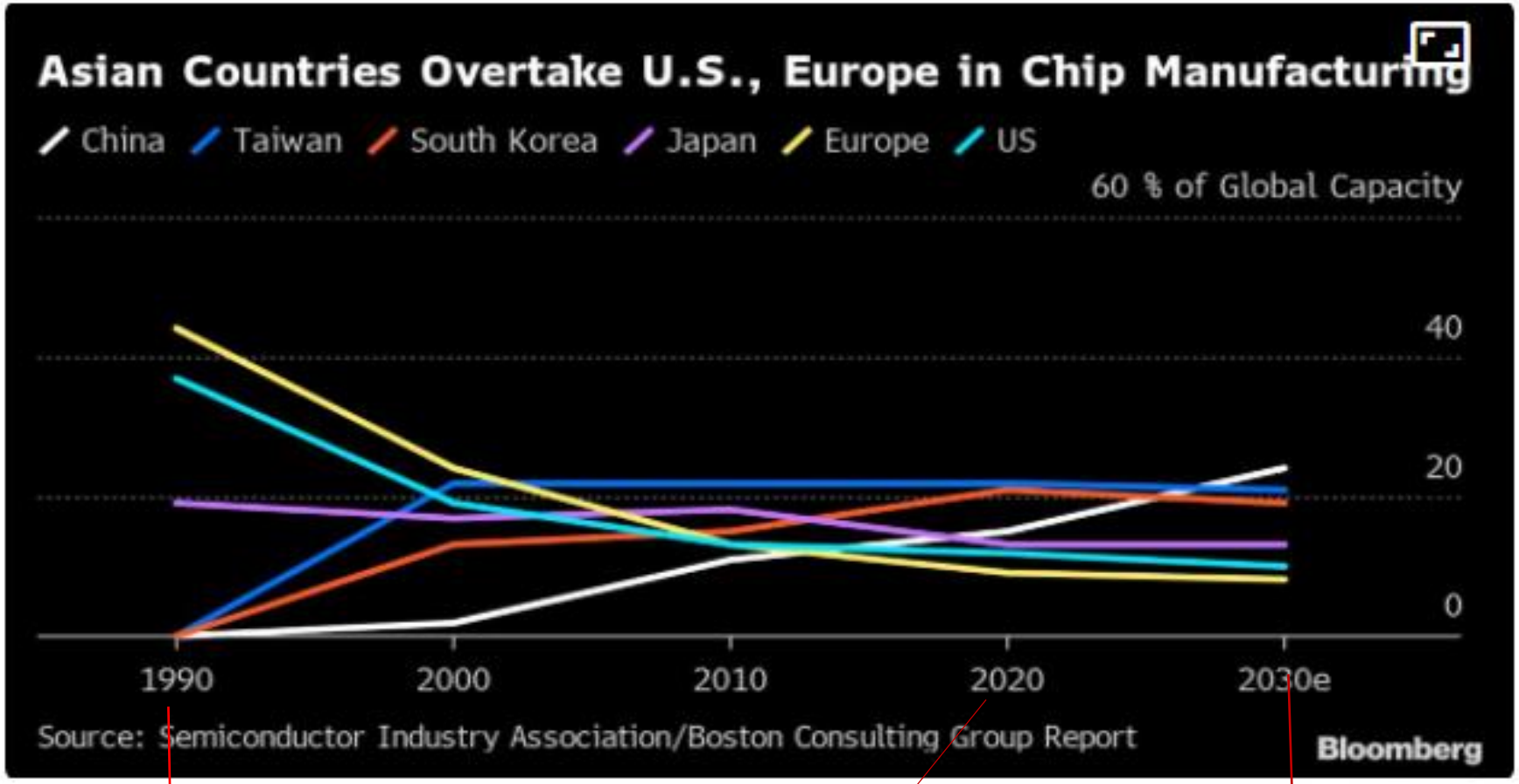
1) Evolution over time of EU Chips Production and EU imports ?

2) What is the EU Chips Act ?

3) Questions that can be raised

4) Message for CESEE countries

Main Chips producers in the World: Past, Present, Future

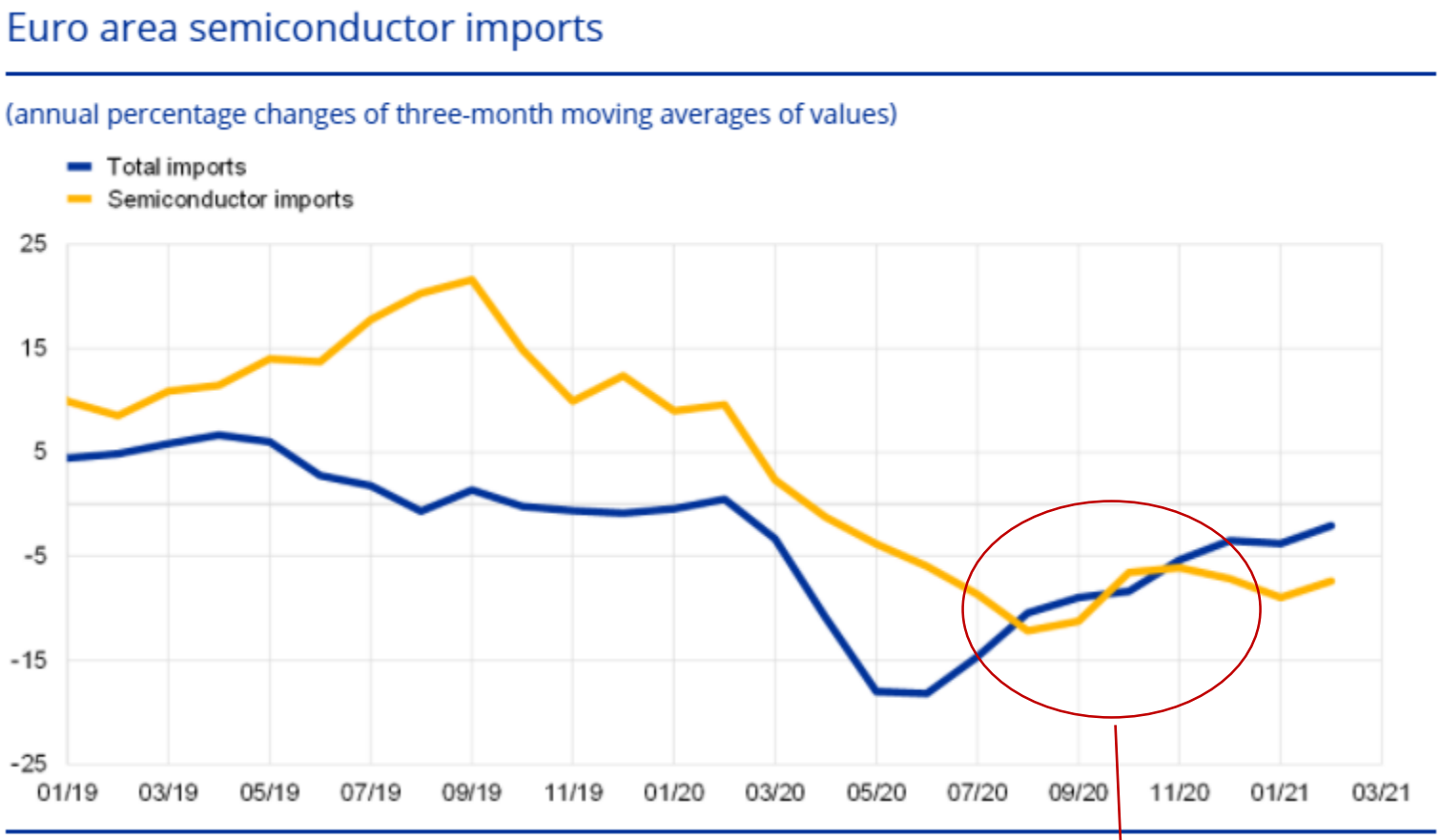


EU had 40% market share and seemed to have first mover advantage

Taiwan is main supplier of CHips
The EU at 10% market share

If EU does nothing than in 2030 it remains at 10%

EU imports of Chips from abroad (Taiwan, S-Korea, US..)

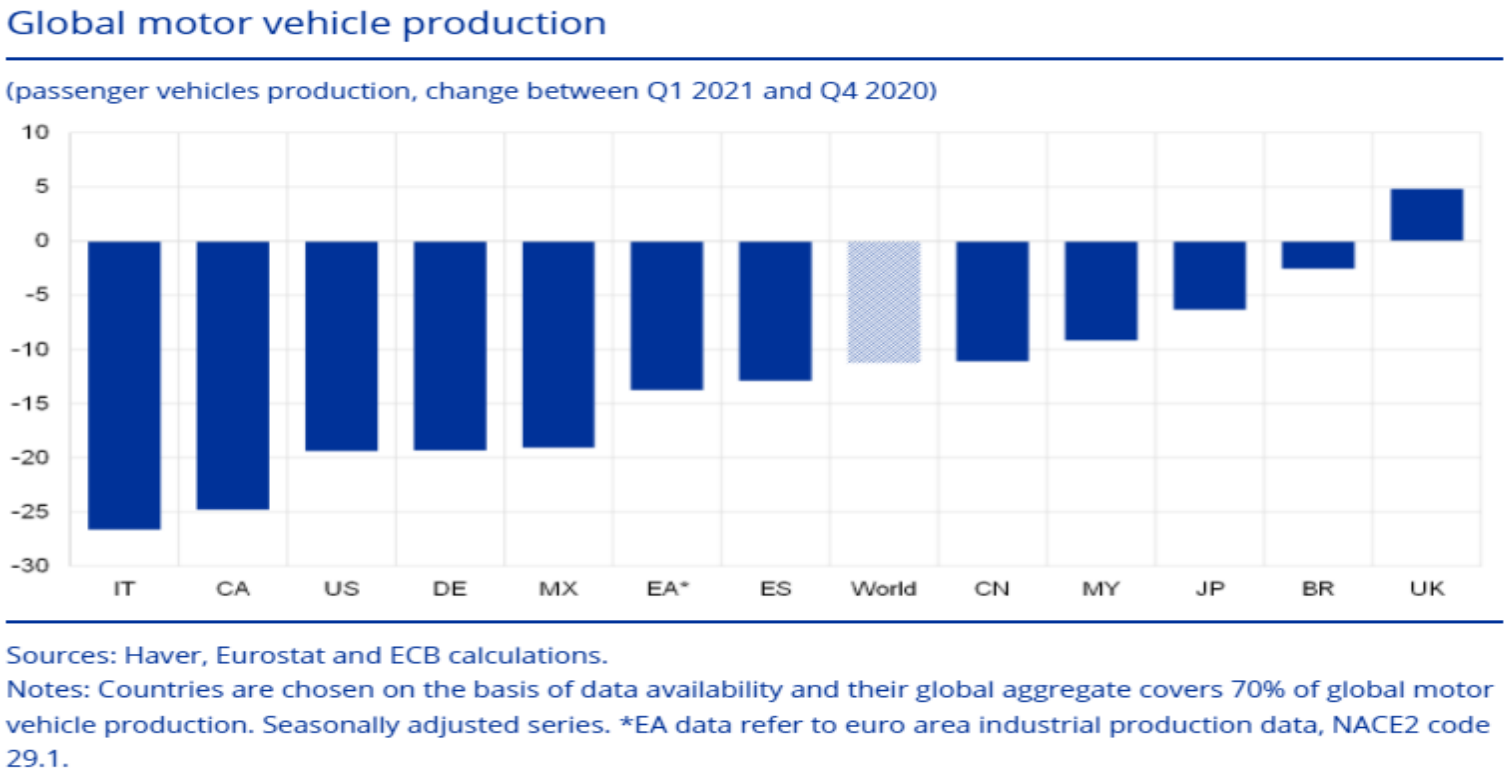


Sources: Trade Data Monitor and ECB calculations.

Note: Latest observations are for February 2021.

EU imports on the rebound in ‘21, but less so in CHIPS, hence the shortage

Dependency of EU Car industry on Chips



Less EU car production due to Chips shortages !

EU Chips Act

EU response: The European Chips Act (announced Sept 2021)

Objectives:

1) To produce a larger part of semi conductors locally in the EU
2) To secure Chips supply and reduce vulnerability to suppliers
3) To co-ordinate spending in EU, not leaving it to national initiatives
4) More tech sovereignty

EU Chips Act - context

- EU wants to double production by 2030 e.g. 20% rather than 10%
- EU sees local Chip production as complements to imports not substitutes (⟷ different from strategic trade policy e.g. protection in order to substitute Japanese DRAMS in the eighties)
- The cost of building a new semiconductor fabrication plant (the so-called "fabs") from the ground up can have a price tag of up to $4 billion.
- *Production of chips requires many **components** in the supply chains, you need the **machines** where you can fabricate the chips, you need the **know-how** to fabricate the chips and the manufacturing **capability** (and scale)* (CEO- IMEC tech center)

Questions that can be raised

- Is it a viable strategy for EU to further build its own chips industry? Can the EU re-vitalize its initial incumbent advantage in Chips production? Or does it want to protect existing EU production from foreign take-overs (ASML)

- Is this a strategic response to the US “Chips for America” Act, proposed recently (52 billion $ for US made Chip production) ? Is it a sign of an EU independent path for tech? Or in collaboration with US, to decouple from Asia’s reliance in semi-conductors?

- Green Critics ask: Is this ecologically friendly production? What is the green footprint? Does EU have access to raw materials needed for Chip production?

Digitalizing and greening GVCs: what does the future hold ?

- Industrial policy usually comes at great cost and success is not always guaranteed
- Chips production is an area where the EU had a first-mover advantage but can EU revitalize this position? Will more local production result in innovative technologies in future ?
- A trade-off between *efficiency* in production and *availability* seems to be on the table. Is this justified in the face of systemic Risks (pandemic,..) ?
- What part of the Chip value Chain does EU invest in? How will local Chip production be spread across the EU? What is the role for CESEE?
- Funds alone may not be sufficient to create a competitive EU Chips industry

Broader questions

- Do we return to a situation before Bretton Woods agreement without multilateralism, but high regionalism instead ?

- More Government and Less Market: does it work for the Tech sector?

- Critical tech players in the EU like Philips, Nokia, Ericson… were facing unfavorable conditions (lack of venture capital, uncompleted single market, competition policy against market concentration, risk-averse culture etc…) which led to a downfall. How can this be avoided in future?

EU Survey Results on Tech issues

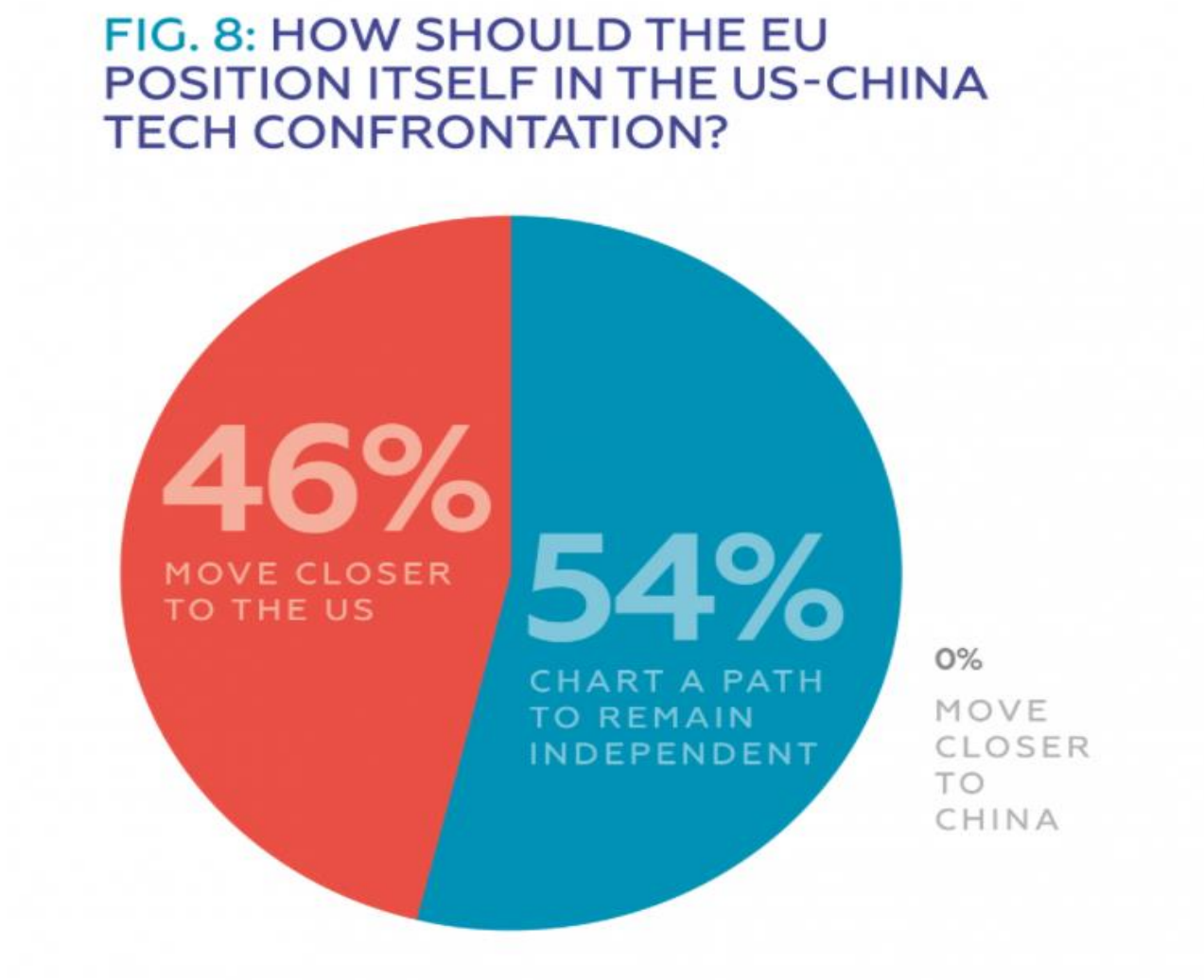
FIG. 7: HOW WOULD YOU RATE THE FOLLOWING CRITICAL TECHNOLOGY AREAS BY DEGREE OF DIFFICULTY FOR THE EUROPEAN UNION'S INNOVATION INDUSTRIAL BASE AND CAPACITY TO ACT INDEPENDENTLY?

FROM LEAST (1) TO MOST DIFFICULT (5); FIGURES IN %

Source: DGAP Stakeholder Survey 2021

DGAP

EU Survey Results on Tech issues



Message for the CESEE countries

- Current EU Chips production is located in Western Europe (Switzerland, Germany, Netherlands)

- EU Chips Act wants to focus on the high end Chips (2 nano rather than standard 7 nano and energy efficiency)

- Initial development and production may therefore be in existing EU manufacturers and close to the current EU tech R&D centers in Chips
  - Inter-university Micro Electronics Center (IMEC) in Belgium,
  - Laboratory of Electronics and Information Technology (LETI) in France
  - Fraunhofer Institute in Germany.

Existing EU Semiconductor Production

TABLE 5: THERE ARE ONLY 3 MAJOR EUROPEAN SEMICONDUCTOR MANU-FACTURERS, RANKING 12TH, 13TH AND 14TH IN SIZE WORDWIDE IN 2019

	TABLE (€ MILLIONS)	EMPLOYEES	
STMicroelectronics	7,954	45,554	Switzerland
Infineon	7,525	41,400	Germany
NXP Semiconductors	7,450	29,400	Netherlands

Sources: Anysilicon, "Top 15 Semiconductor Sales Leaders – 2019", (2019); Infineon, "Facts & Figures", (2020); Macrotrends; "NXP Semiconductors: Number of Employees 2009–2020 | NXPI," (2020); Macrotrends, "STMicroelectronics: Number of Employees 2006–2020 | STM," (2020)

Thank You !