Market Failures

Assessment guidance for IPCEIs

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PART A
DESCRIPTION OF MARKET FAILURES IN IPCEIs

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Market failures as justification for State aid

- Markets can fail at delivering efficient outcomes (prices, output, quality, innovation, …)
- Public intervention can improve efficiency of market outcomes when the market on its own is unlikely to deliver efficient solutions
- Point 15 IPCEI Communication:

"The project must demonstrate that it is ***designed to overcome important market or systemic failures, preventing the project from being carried out to the same extent or in the same manner in the absence of the aid****..."*

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Residual Market failures can justify State aid

➔ Market failure is a **necessary** but **not sufficient condition** to justify State aid

Economic market failures relevant for IPCEIs

Positive Externality

Negative Externality

Coordination Problem

Asymmetric Information

I. Positive externalities

- Positive external effects arise when **the activity (e.g., production or consumption) of an economic agent positively affects other economic agents,** but for some reason, the agent generating these benefits does not get paid on the market for them.
- **Example:** beekeeper – bees produce honey, but they also pollinate (somebody else's) fruit trees. Who pays the beekeeper for this "service"?
- The **market failure affects incentives to produce and invest:** undertakings do not sufficiently take the positive externalities arising from their economic activity into account, resulting in suboptimal technologies, investments or output levels. In general, they will **produce too little** of the beneficial activity.

II. Negative externalities

- Negative external effects arise when **the activity (e.g., production or consumption) of an economic agent negatively affects the utility, profit or production possibilities of other economic agents** without these effects being considered in the market-based pricing system.
- **Example:** a factory upstream pollutes a river, destroying fisheries downstream
- The costs that are borne by the undertakings do not fully reflect the **costs inflicted on consumers and society at large**. Again, their incentives will be distorted: in general, undertakings **produce too much** of the harmful activity, or choose worse technologies.

III. Coordination problems

- In a setting with **interdependencies among economic agents**, difficulties to coordinate certain strategies or actions could lead to a suboptimal choices/decision-making
  - **Network effects:** adopting fax machines only makes sense if many other people do so
  - **Economies of scale:** electric vehicles become affordable if produced at large scale, if sufficient charging stations are available etc
- **Welfare losses** that could be caused by coordination problems:
  - **Superior technologies get adopted too late**, or never at all (the first commercial fax system was developed in 1863)
  - **Negative externalities** remain unaddressed

IV. Asymmetric information

- Asymmetric information occurs when one of the relevant actors in the market may be better informed than others. **This imbalance of information affects the decisions and outcomes of economic transactions** and can lead to **market inefficiencies or failures**
- **Example:** When asking your bank for a mortgage, you typically know better than the bank what your risk of default is.
- The asymmetric distribution of information can create the following problems:
  - Adverse selection – the party with less information is at a disadvantage before the deal since it is unable to assess the true quality, or characteristics of the product or service being offered.
  - Moral hazard – situation where one party alters its behavior or takes on additional risk after the deal is signed because it is shielded from the consequences of its actions by the other party.

Common Solutions

- Recall: Market failure is a **necessary but not sufficient** condition for State aid!
- There are many ways in which market failure can be cured:
  - Issues between a small number of agents can usually be solved by **contracts**
  - For larger groups/populations, **regulation** can be effective, for example, permitting, environmental standards, Intellectual Property Rights,...
- Authorities need **convincing explanations** of why none of the above alternatives can fully solve the market failure of interest, before considering State aid as possible solution.

PART B
DECISIONAL PRACTICE - MARKET FAILURES IN IPCEIs

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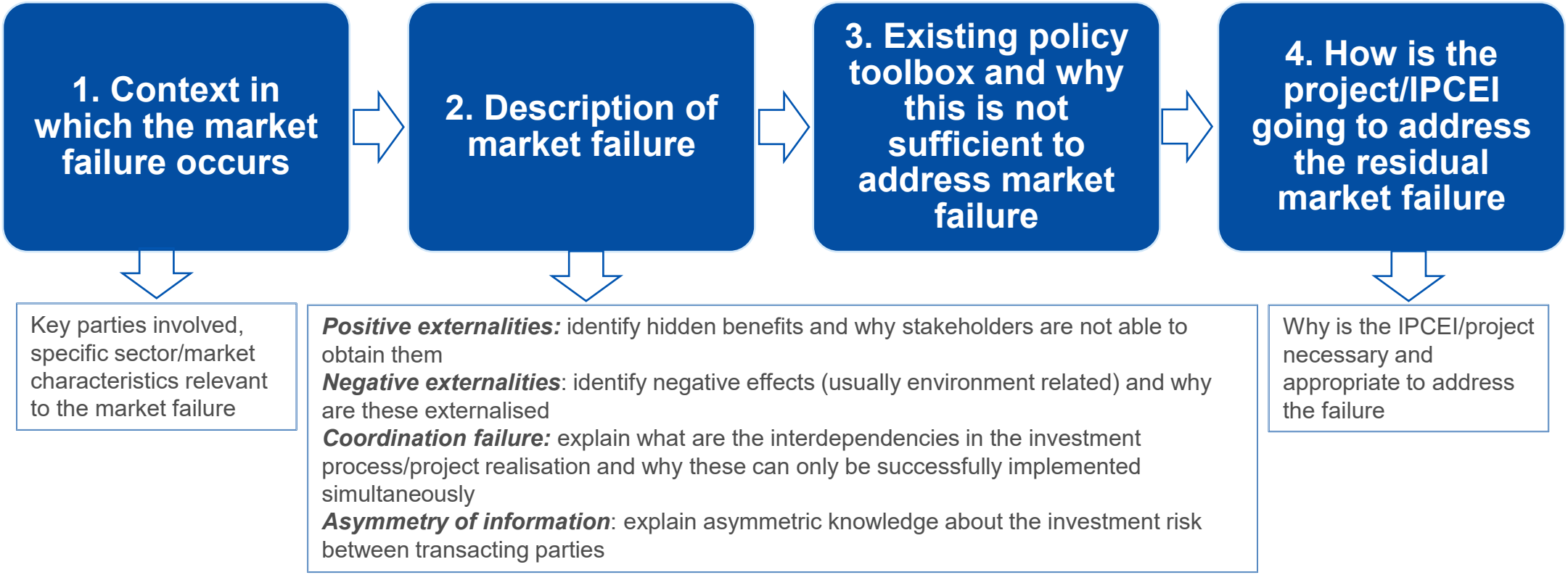
Methodology

- Assessment focusses on the four market failures mentioned above
  - At least one relevant market failure should be established
  - Possibility to argue additional systemic failures → but need to properly substantiate
- Case by case assessment
  - Sector/market concerned by the IPCEI → certain market failures more obvious in some sectors/markets than in others (e.g. hydrogen IPCEIs and negative externalities)
  - Type of beneficiary → SMEs or LEs may be in a position to argue different market failures
- Market failures are examined at project portfolio and Chapeau/IPCEI levels

Methodology (cont'd)



Caution: challenges are not market failures: public policies and regulations, inefficient market structures (e.g. oligopoly), managerial difficulties or operational challenges, uncertain funding
→ do not qualify as market failures

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Example of positive externality

IPCEI MED4CURE (recitals 18 and 273-275)

- "[T]he overuse of antibiotics accelerates resistance spreading. Fighting AMR requires limiting antibiotics consumption to the minimum necessary, while continuing to discover and develop new antibiotics whose value will mostly lie in the insurance, they offer to fight bacteria when resistance appears. This challenge is inconsistent with the economic interests of anti-microbial drug developers. Indeed, by investing in drug development, producers generate primarily a gain for the society than for their own financial benefit. These positive effects are not fully internalised by producers because of strict price controls or because of an insufficient individual willingness-to-pay"

- "[…] individual projects generating benefits to the society may not translate into the equivalent private rate of returns for the undertakings realising them thus rendering such projects unattractive from the private investors' perspective. Patent protection is currently insufficient to incentivise the undertakings to fully privately finance such R&D&I and FID projects because of the strict price control mechanisms that apply to the pharmaceutical sector and the long development times needed for the innovative therapeutical products targeted in the IPCEI Med4Cure. This leads to the underinvestment (or underproduction) in innovative technologies and therapies in the pharmaceutical industry, from the social perspective, which justifies the need for State intervention. State aid may complete this gap and ensure a level of investment in innovative technologies and therapies in the pharmaceutical industry closer to the socially optimal.

- The IPCEI Med4Cure will address such positive externalities, for example, by bridging the funding gaps of the participating undertakings to achieve the following outcomes, that will benefit to the society beyond the scope of the individual projects:

  – Developing several drug leads and bringing them to the pre-industrial phase to treat patients[…]."

Example of negative externality

IPCEI ME/CT (recitals 385-386):

- “Undertakings of the microelectronics and communication technologies sectors compete globally with competitors subject to different sets of regulation that are not aligned. Despite the microelectronics manufacturing environmental footprint, no common global environmental policy exists in the sectors to reduce the environmental impact of a product lifecycle or even to differentiate the product based on its environmental sustainability. As a result, in the absence of level playing field, **the companies lack incentive to invest on improving the environmental impact** of their products and processes.

- The individual projects **will address negative environmental externalities**, for instance by:

- undertaking research on the design and production of microelectronics components towards less energy-consuming and less polluting solutions, reducing the use of hazardous chemicals and metals, and using recyclable and/or recycled water, packaging or materials;

- optimising manufacturing processes in order to increase the operational life of the devices, and reducing the replacement rate and the need for new products; and

- improving recyclability of the components and systems in an energy- and environment-friendly way and re-integration of recycled raw materials, especially rare metals, in the microelectronics and communication technologies value chain”.

Example of coordination failure

IPCEI CIS (Cloud) (recital 236 -*239*):

- *"[..]failures arise when the private profitability of innovation is conditional on other companies joining the innovative efforts at the same time. This can arise, in particular, when the development of an open-source interoperable solution requires different innovations along the continuum. There is a lack of economic incentive for the smaller market players to initiate developments alone, as it can only be profitable if these services become part of a much larger digital ecosystem with a multitude of offerings that can compete with full stack providers. This lack of coordination on a common and interoperable open-source standard has resulted in a lack of interoperability and data portability, which locks customers in with their current provider."*
- *["…]the integrated, coordinated and simultaneous nature of the individual projects in IPCEI CIS is expected to address coordination failures in the development of a common interoperable and open cloud-to-edge environment. In particular, in an open-source system there are strong network effects due to mutually reinforcing entrepreneurial activity within a cluster of companies[…]".*

Example of information asymmetry

HY2TECH (recitals 337-338):

- "The presence of asymmetric information may lead to a situation where innovators may face difficulties convincing investors of the prospects of their projects, thereby increasing the cost of or even limiting access to capital to fund the projects. The Commission's assessment of Hy2Tech relies on a transparent, public, open process of individual project selection together with the explicit joint commitment by Member States across the EU to contribute to projects in Hy2Tech. This specifically contributes to addressing this market failure by reducing information asymmetry and providing regulatory certainty. Hy2Tech seeks to address problems with respect to asymmetric information in the following way:
  - The residual risks pertaining to the hydrogen technology itself and the fragmented set of information around its specific deployment for heavy duty applications may limit access to capital as compared to other more mature technologies. Hy2Tech will help overcome this through the creation of a value chain that kick-starts the market. Once this has been achieved, investors are expected to be less reluctant to invest in similar renewable and low carbon hydrogen production technologies; and
  - Given the high cost and the irreversibility of an investment in a large-scale electrolyser system, undertakings potentially willing to adopt this technology remain reluctant to invest in an unproven technology. However, technology suppliers need to demonstrate the viability of their disruptive innovations before being able to sell their product in high volumes. Therefore, the development of potentially superior yet unproven technologies can be trapped into a dead end because of the asymmetry of information between technology suppliers and their potential customers".