**Questions for Macro 2 Exams (normal and repeat) 2020-2021 with points that may be critical for to answer the questions.**

**1.** Consider the likely, near future situation in which there is a significant reduction in the global consumption of fossil fuels, driven by a combination of technological innovation, a quantitative limit imposed on fossil fuel consumption per unit of GDP and a penalty on prices of fossil fuel-based products or on taxes on fossil fuel based profits:

1.1. Discuss its different impacts on the following groups of countries:

1. Rich, advanced economies operating at the technology frontier.
2. Economies that rely on exports of fossil fuels, face volatile prices and revenues and have limited technological capabilities.
3. Poorer economies dependent on imports of fossil fuels for their production processes and with very limited financial, scientific and technological capabilities.

1.2. Suggest possible public policies that could help to share the global costs and benefits of such a reduction in fossil fuel consumption more equitably across those countries.

Ideas that can be included in the answer

**Richer and technologically more advanced economies have the financial and technological capabilities to undertake the required research and required investment to transform new science and technological progress into usable energy and production capacities and activities. Not only can they lead, but their growth dynamics can directly and significantly benefit from science and technological developments related to building greener economies and societies. They also happen to be the largest polluters, because of the scale of their economic activities and levels and patterns of consumption.**

**Fuel fossil export dependent economies, with limited technological capabilities and volatile income streams, may lose out in the short to medium term and may not have the capacities to change their economic patterns and trajectories on their own, because the lose their main, sometimes their only source of foreign currency and main driver of growth and of public and private investment. They desperately need to diversify away from fossil fuel exports and find ways (for example, through sovereign funds or other means) to stabilise the stream of income. With the window of opportunities closing down fast, because of climate change pressures and technological progress elsewhere, they ned all the help they can get to eliminate fossil fuel export dependence.**

**Poorer, fossil fuel dependent and low technology economies are dependent on the purchase of technology produced elsewhere and have limited financial and technological capacities to suddenly adjust to new technologies.**

**Key questions would be: can states of richer and technologically advanced economies mobilize the political support and the economic/financial muscle (for example, through significantly higher levels of taxation of profits and rents) to invest in large scale public or publicly supported programs to change the science and technological paradigms of energy production and consumption? Can richer economies share the direct and significant benefits they can achieve from greening their growth trajectories? Can science and technology be adapted to capacities and needs of poorer economies with the desirable effect of accelerating growth with more sustainable and inclusive trajectories and patterns? Should these changes be left to the market alone or PPPs, or be strongly led by public international institutions with a solid focus on the environment, on fairness and inclusion?**

**2.** *“In the earlier stages of development of an industry, what we can call its infancy or sunrise stage, industrial policy may be focused on innovation and on coordination of competitive investment and of complementary investment. In fact, it does not matter which specific industry is developed as long as there is enough complementary investment and economies of scale are allowed to develop.”* (Ha-Joon Chang).

2.1. Explain and discuss the above sentence.

Ideas that can be included in the answer

**Earlier stages of industrial development or the sunrise stage of a particular industry are intensive in research, experimentation, innovation, and lack product and process standardization. Thus, industrial policies should focus in supporting these processes, because: (i) private costs and uncertainty of engaging in research may offset private gains, whereas social gains may largely exceed private costs and uncertainty and (ii) these are the critical factors in infant industry development.**

**Many industries may not develop and may not be viable if there is not enough complementary investment that develops the supply chain, both upstream (suppliers of products and services required for a particular industry to operate) and downstream (consumers of the products of that industry). A very specific aspect of complementarities is related to technological complementarities – new products may or may not be compatible with the existing technologies and standards (for example, the market value of a 5G phone depends also on the availability of a 5G network and 5G products and apps). Market lead coordination costs are just too high.**

**Infant industries need to build economies of scale in order to become cost efficient and increase productivity. Coordination of competitive investment means that barriers to entry into specific markets and industries are established tom avoid wasteful investment, competition and price wars.**

2.2. Refer to specific policies that can be utilised for the purposes mentioned.

Ideas that can be included in the answer

**Policies to support innovation can range from patents and intellectual property rights (that guarantee monopoly power for a certain amount of time to the innovator by introducing rigidities and barriers for access to knowledge and information, which enables internationalization of externalities but reduces social welfare), to direct subsidies to lower the costs of innovation, adaptation, adoption and mastering of new technologies (which compensates the innovator but guarantees the universal access to the innovation at low private costs), to the development of the institutional framework (development of science and technology complexes, like the universities and their linkages with the production basis, investment in education, establishment of strong technology related requirements development of technology oriented finance, etc.).**

**Policies to coordinate complementary investment include the utilization of public investment as a strategic beacon, the formation of for a and association of industries, providing information about future possibilities (demand and supply) that can be utilized for planning of public and private investment, subsidising the adoption of new technological standards to guarantee technological complementarity (for example, subsidising the universal adoption of solar panels for household production of electricity, which will then lower the costs of production and incentivise quality improvements in solar panel production due to scale, and generate excess supply of renewable energy that can be resold into the national or subnational grid).**

**Policies to coordinate competing investment are barriers for entry, like licensing with stringent requirements, to reduce the number of firms investing in one particular industry (this demands a very good knowledge of the dynamics of the specific market), compensation to investors excluded from one industry by rewarding them with allowances to entry into another industry, development of producer associations that operate like oligopolies to coordinate production, markets, quotas and prices, etc.**

**All these policies may run the risk of creating crony capitalism, but it has also been argued, on the basis of the analysis of experiences like that of Japan, Singapore, South Korea, Finland, that such policies may reduce rent seeking because they eliminate the markets for rents.**

2.3. Is the argument presented in the above sentence consistent with the neoclassical concept of market driven (factor endowment based comparative advantage compliant) industrial policy? Why or why not?

Ideas that can be included in the answer

**No, the argument of the above sentence is not consistent with neoclassical market driven, factor endowment based comparative advantages led industrial policy. Neoclassical approaches to industrial policy require the assumption that markets are the most efficient resource allocators and, therefore, the most effective beacons for any strategy and policy. The sentence above violates these assumptions in all of their extension, as everyone of the activities and policies suggested creates what neoclassical economists would call market imperfections as a means of enabling the development of industrial capabilities and the industrial fabric deemed necessary, even if not sufficient, for successful industrialization to take place.**

**3.** Industrialization and economic growth and development

3.1. Does industrialization matter for socioeconomic development? Why or why not?

Ideas that can be included in the answer

**Yes, because of cumulative increasing returns, learning, diversification of production, skills and exports, and increasing incomes (which affect consumption, savings, investment and taxes).**

**Then literature (for example, Ha-Joon Chang, John Weiss, Kaldor, etc.) refer to three major sets of linkages that industrialization promotes:**

* **General linkages: (i) demand (higher incomes, demand for equipment, spares, services and inputs); (ii) pecuniary (foreign exchange, taxes, savings →investment); (iii) technological (employment, skills, technology production and transfers)**
* **Linkages specific to manufacturing: dynamic cumulative increasing returns (skills, technological progress, production and development of capital goods and organization; specialization, division of work, cooperation, network of suppliers and logistics;)**
* **Linkages associated with productivity: (i) endogenous productivity growth that leads to higher quality of lower costs of capital goods and inputs for other sectors, lowering the costs of investment elsewhere in the economy; (ii) incentivising productivity growth in other sectors (quality of capital goods and inputs, skills, lower costs of investment →higher profits → higher savings →higher levels of investment; absorption of labour from lower productivity sectors in higher productivity sectors; (iii) productivity gains that result from skills, better production capacities and better organization of production are permanent and larger for the economy as whole than for individual firms.**

**Thus, industrialization matters because of its transformative effects in the economy as a whole, which changes the long term trajectories of social and economic development and growth.**

(Please, refer to slides of the lecture 17 of theoretical classes).

3.2. Consider an economy, like the Portuguese, with no obvious scientific, technological and educational advantages, unable to pursue its own monetary policy, in which the recent dynamics of economic growth have been focused on tourism and a real state bubble, which is integrated in an economic block dominated by dynamics of financialization and policies of austerity, which needs to generate massive youth employment, increase real wages and face a debt problem. What challenges are posed to the development process, how can industrialization help and what possibilities are there for industrialization to take place?

Ideas that can be included in the answer

**The economies concerned have no monetary, exchange rate and trade policies and their governments are locked on in stringent budget constraints. Domestic devaluation, meaning repression of wages, seems to be the only way to improve competitiveness, but, as this happens, the economy becomes more dependent on and vulnerable to external dynamics as the domestic demand falls. Production structures and capabilities seem to be narrow and underdeveloped; growth is speculative and volatile and not leading to massive and decent employment, particularly amongst the youth.**

**The common tread that seems to connect the challenges and possible alternatives seems to be the dynamics, the structures and the trajectories of investment and of production, and how these are financed. Investment, production and employment would make GDP grow faster and, if it grows significantly faster than debt (new debt and the interest on old debt) the debts to GDP ratio will fall and the economy will become a lot more robust. Debt may become a problem if GDP is growing slowly.**

**There are many ways to think about the production problem, and all of them require a good understanding of the existing dynamics, structures and trajectories of production, investment and trade and why they are as they are. Next, it is important to identify the areas where linkages can be multiplied and complementary investment developed to the possible maximum – this is on way how cumulative increasing returns can spread throughout the entire economy, permeate the fabric of the society and generate decent employment. For this to happen, the economy needs move a few notches up the lather of scientific, technological and organizational capabilities.**

**The next big question is how to finance it. Public investment in infrastructure, science and technology as, as a strategic beacon, in complementary productive activities may be required, as well as the ability to utilise direct subsidies and social transfers to promote skills, innovation, investment, consumption and wellbeing. These require that the state stops losing money in speculative, financialized activities (such as in the rescue of criminal debt and debtors, in guaranteeing private, speculative debt, in money losing and socially irrelevant public-private partnerships, in de facto privatisation of social/public services, etc.), and taxes higher incomes, profits of large capital and of financial speculation. The economy can also utilise external savings (foreign direct investment or borrowing) but needs to make sure that these are deployed in line with industrial policies as mentioned in the previous paragraph. If GDP accelerates because of significant progress in production and employment, incomes (thus wages, profits, savings, taxes) will increase together with demand and, with this, the productive investment will become more attractive.**

**4.** *“To control the pandemic, it is essential to suspend intellectual property rights on medical products related to covid-19.”* (Mariana Mazzucato, Jayati Ghosh and Els Torreele).

4.1 Explain and discuss the above sentence.

Ideas that can be included in the answer

**The argument of the authors is that intellectual property rights, or patents, are creating monopoly power and rents at the expense of the access of the entire world, rich and poor economies and societies alike, to the vaccines. People are dying and economies and households are being destroyed to protect corporate profit and vaccine nationalism. Furthermore, a significant part of the research costs to understand the virus and develop and produce the vaccines has been financed by states and state scientific agencies, such that corporations owe the society. Moreover, it is not possible to control the global pandemic if a very significant share of the world population is left behind. Finally, this is a global social emergency that requires global coordination and quick action. Thus, it is argued, patents should be removed in this and other similar cases.**

4.2. What other forms of policy may be adopted to promote innovation, and when and how they may be superior to patents?

Ideas that can be included in the answer

**Policies to support innovation can range from patents and intellectual property rights (that guarantee monopoly power for a certain amount of time to the innovator by introducing rigidities and barriers for access to knowledge and information, which enables internationalization of externalities but reduces social welfare), to direct subsidies to lower the costs of innovation, adaptation, adoption and mastering of new technologies (which compensates the innovator but guarantees the universal access to the innovation at low private costs), to the development of the institutional framework (development of science and technology complexes, like the universities and their linkages with the production basis, investment in education, establishment of strong technology related requirements development of technology oriented finance, etc.).**

**Patents create science and technology rigidities and barriers to access and dissemination knowledge and capabilities, such that they reduce social welfare for the sake of protecting private profits. Hence, in principle all other forms of promoting and disseminating knowledge and innovation should be always superior and preferable to patents. This is particularly the case in situations, like the covid pandemic, climate change, new sources of energy, new pandemics, and so on, which are, by their nature and social context, social goods and social bads or social problems (goods, bads of problems of the society as a whole) rather than private ones.**