THE MAIN TENETS OF INDUSTRIAL POLICY[1]

Bojana Radovanović[2]
Mihajlo Djukić[3]

Abstract:
The aim of this paper is to discuss the main tenets of industrial policy. Industrial policy, as a conscious effort on the part of government to encourage and promote activities specific, industry or sector with an array of policies, through the process of cooperation and coordination with the private sector, is an indispensable tool for steering economic development. It is needed both for developing and developed countries. Due to the information and coordination externalities, the productive forces cannot be developed through the market mechanism itself and the intervention on the part of government is needed. The programmes of an industrial policy need to be tailor made and country specific. However, some of the programmes have been historically shown as effective. Those programmes are: Subsidizing costs of "self-discovery", Developing mechanisms for higher risk finance, Internalizing coordination externalities, Public R&D, Subsidizing general technical training, Taking advantage of nationals abroad (Rodrik 2004). Serbia as a country that has experienced the process of deindustrialisation needs an industrial policy that will take into account the main tenets of the concept of industrial policy.

Key Words*: Industrial policy, Implementation, Serbia.*

1. INTRODUCTION

Serbia is experiencing a process of de-industrialisation. During the period 2001-2012 its industrial production has been growing at an average annual rate of 0.2%, but it still has not reached the output of the late 1989 (Radovanovic, Kocovic 2013). In the past three decades, the share of industry in GDP has been decreased, as well as the employment in this sector. Serbian exports are dominated mostly by

[1] This paper is a part of research projects numbers 47009 (*European integrations and social and economic changes in Serbian economy on the way to the EU*) and 179015 (*Challenges and prospects of structural changes in Serbia: Strategic directions for economic development and harmonization with EU requirements*), financed by the Ministry of Education, Science and Technological Development of the Republic of Serbia.
[2] Bojana Radovanoić, Research Associate, Institute of Economic Sciences
[3] Mihajlo Djukić, Research Associate, Institute of Economic Sciences

primary and labour- and resource-intensive products making unfavourable export structure. The economic transition after 2000 was based on a neoliberal model of privatisation and liberalisation. Although there have been certain incentives on the part of Government, an industrial policy has not been explicitly defined until 2011, when Government of Serbia adopted a *Strategy and Policy of Industrial Development of Serbia 2011-2020*. However, industrial policy is defined within this document as implementation of measures and policies in order to facilitate and encourage emergence of new enterprises in general (Ibid). It stresses that liberalisation and privatisation are the main concepts of industrial policy. The question that rises is whether industrial policy defined as such is in line with the main tenets of the concept of industrial policy as defined in the contemporary literature. In order to address these issues we first have to understand the main tenets of industrial policy.

The aim of this paper is to discuss the main tenets of industrial policy. We will first provide definitions of industrial policy, then discuss the arguments in favour of the implementation of industrial policy, then outline the main challenges and critiques of the industrial policy, and finally present the main principles on how an industrial policy should be created and implemented.[4]

2. WHAT IS AN INDUSTRIAL POLICY?

> "Market forces and private entrepreneurship would be in the driving seat of this agenda, but governments would also perform a strategic and coordinating role in the productive sphere beyond simply ensuring property rights, contract enforcement, and macroeconomic stability."
>
> Dani Rodrik (Rodrik 2004)

Industrial policy, defined in a broad sense, encompasses all public policies that have an impact on industrial development, namely: "policies affecting 'infant industry' support of various kinds, but also trade policies, science and technology policies, public procurement, policies affecting foreign direct investments, intellectual property rights and the allocation of financial sources" (Cimoli, Dosi, Stiglitz 2009: 1). It includes all the "restructuring policies in favour of more dynamic activities generally, regardless of whether those are located within industry or manufacturing per se" (Rodrik 2004: 2). Industrial policies are seen as a

[4] The elements of this paper draw on the paper titled *Industrial Policy for Economic Development: Perspectives for Serbia*, published in the collection of papers „Economic science at the crossroads", Institute of Economic Sciences, 2013.

complement to the market forces, since they "reinforce or counteract the allocative effects that the existing markets would otherwise produce" (Ibid: 3).

When defined in a more narrow sense, industrial policy is seen as "a concerted, focused, conscious effort on the part of government to encourage and promote a specific industry or sector with an array of policy tools" (DCED 2013), or "a policy aimed at particular industries (and a firms as their components) to achieve the outcomes that are perceived by the state to be efficient for the economy as a whole" (Chang 2003a: 112).

3. WHY DOES A COUNTRY NEED AN INDUSTRIAL POLICY?

The question that arises is why there is a need for that effort on the part of government to encourage and promote a specific industry or sector or even firms. The shortest answer is that industrial policy is needed in order to foster economic development, seen as "great transformation from traditional economies to economies driven by industrial activities (and nowadays also advanced services)" (Cimoli, Dosi, Stiglitz 2009). More precisely, a country needs industrial policy because: (1) only certain activities, namely those with increasing returns, technological change and synergies, enable economic development, while the others, characterised by diminishing returns, unskilled labour, extreme price fluctuations, etc., keep a country underdeveloped (Reinert 2007); (2) countries diversify over most of their development path (Imbs and Wacziarg 2003); (3) in the presence of more developed countries, less developed countries cannot develop industries without a state intervention (Reinert 2007, Chang 2003b); (4) entrepreneurial - risk taking, visionary state invests in areas, crucial for economic development, where the private sector does not invest (Mazzucato 2013); (5) market fails to solve a coordination and information problem (Chang 2003a, Rodrik 2004); We will briefly discuss all five arguments.

To begin with, the necessity of industrial policy is based on the assumption that a country's productivity growth is dependent on the economic activities in which it specialises (Reinert 2007). In addressing the questions how rich countries became rich and why the poor stayed poor, Reinert argues that economic development is activity-specific and that it takes place in activities with increasing returns, technological change and synergies.[5] He distinguishes between two types of economic activities. On the one hand, Shumpeterian activities, which operate in manufacturing, by means of continual innovation lead to increasing wages, create

[5] Reiner defines synergies as "factors that acting together produce the cumulative causations or reactions that create the structural change we call economic development" (Reinert 2007: 37)

welfare and development. On the other hand, Malthusian activities characterised by diminishing returns, unskilled labour, extreme price fluctuations, etc., found in agriculture and raw material extraction, keep wage-levels close to the subsistence level (Ibid). In other words, it does matter whether a country specializes in labour- and/or resource-intensive types of activities or more technologically advanced, capital-intensive manufacturing. In other words, what a country produces influences how wealthy it is. However, only through the conscious effort on the part of government to encourage and promote a specific industry can a country turn form labour- and/or resource-intensive types of activities to more technologically advanced, capital-intensive activities.

Moreover, instead of specialising on what a developing country does the best, economic development is based on diversification for which an industrial policy is needed (Imbs and Wacziargs 2003). Imbs and Wacziargs' findings, based on the examination of the patterns of sectoral concentration and diversification using a wide panel of countries, show that as countries get richer sectoral production and employment become less concentrated and more diversified. They show that the economic activity is spread more equally across sectors until relatively late in the development process, when countries start specializing again. In other words, poor countries tend to diversify, and only when they reach relatively high levels of per capita income they start to specialise (Ibid). However, only through a government action and public-private cooperation could productive diversification happen (Rodrik 2004).

Furthermore, in order to develop new industries in the presence of more developed countries a less developed country needs a state intervention through an industrial policy (Chang 2003, Reinert 2007). This is known as "infant industry argument". Infant industry argument was first set out by Alexander Hamilton, the first Secretary of the Treasury of the USA, in his *Reports of the Secretary of the Treasury on the Subject of Manufactures* in 1791 (Chang 2003a, Reinert 2007), and further developed by Friedrich List in his book *The National System of Political Economy* published in 1841 (Ibid). Hamilton argued that due to the competition from abroad new industries that could become internationally competitive would not appear in the USA unless their initial losses were covered by the government (Ibid). These infant industries needed protection from the competition of more advanced foreign (in this case British) competitors until they grow enough to be able to compete on international markets. Hamilton advocated for the state aid in form of duties or in the rare cases prohibition of import (Chang 2003a). Thus, the industrial development of todays' most developed country was based on interventionist policies and only when it obtained industrial supremacy, USA finally liberalised its trade (Ibid). However, USA was not the first to use infant industry protection. According to List, that was Britain (Chang 2003a). List argues

that free trade is beneficial for the countries at the same level of development, while infant industries need to be protected until they are able to compete on international markets. The policy of infant industry protection, "by a system of restrictions, privileges, and encouragements" were used by the Britain and the USA, but also Germany, France, Sweden, Belgium, Netherlands, Switzerland, and they lie behind the success of Japan and Asian newly industrialised countries (Chang 2003a).

Not only do less developed countries need an industrial policy in order to climb up the ladder of economic prosperity, but an "entrepreneurial state" is the main driving force of the most developed countries. Mazzucato argues that "the radical, revolutionary innovations that have fuelled the dynamics of capitalism - from railroads to the Internet, to modern-day nanotechnology and pharmaceuticals – trace the most courageous, early and capital-intensive 'entrepreneurial' investments back to the State" (Mazzucato 2013: 3). She argues that "the visible hand of the State" made possible for investments that have embedded radical uncertainty to happen (Ibid). She points out that "all of the technologies that make Job's iPhone so 'smart' were government funded (Internet, GPS, touchscreen display and the recent SIRI voice activated personal assistant)" (Ibid). Thus, contrary to the wisdom of the mainstream economics, which perceives private sector as dynamic and risk-taking, in fact, as Mazzucato argues, the most risky and uncertain activities in the economy are undertaken by the State, which takes shapes and creates new markets.

Moreover, as Weiss argues, whilst it was not titled as industrial policy, the majority of governments continued to intervene in markets, affecting the economy in a highly selective manner (Weiss 2013). These interventions have been described as 'competitiveness policy', and many countries have published programmes to raise competitiveness, usually focusing on incentives for R&D and innovation.

The question that rises is why the productive forces cannot be developed through the market mechanism. It is due to the information and coordination externalities. The entrepreneurs of a developing country must experiment with new product lines, adapting the technologies from abroad to the local conditions. This requires discovery about the costs of such activities. This is what Rodrik and Hausmann call "self-discovery" (Hausmann and Rodrik 2004). Such activities have great social value, but also high private costs. If the entrepreneur fails, he bears the full cost of his failure, while if he succeeds, the value of his discovery is shared with the other producers who emulate him. This is known as informational externalities. Since easy of entry facilitates imitation, it undercuts the rents to entrepreneurship in self-discovery. Therefore, entrepreneurs from the low income countries are reluctant to engage in self-discovery. Through subsidy of some kind, trade protection, or the

provision of venture capital an industrial policy can tackle the informational externalities that restrict self-discovery (Rodrik 2004).

Moreover, in the modern industrial economies, characterised by scale economies, only few firms can operate, which results in an oligopolistic competition. In such case economic actors are strategically interdependent, which leads to inefficiency and a state intervention is necessary. Chang argues that intervention needed here is not necessary an antitrust-type policy (Chang 2003a). Since in modern industrial economies, assets are specific and they lose value when redeployed, coordination problem leads towards net reduction in the amount of resources available to the economy (Ibid). In order to solve a coordination problem, the following policies could be used: investment coordination, recession cartel, negotiated exit or capacity scrapping (Chang 2003a).

4. CHALLENGES OF AN INDUSTRIAL POLICY

After we have presented arguments in favour of industrial policy, we will now turn to its criticism. To begin with, critics of implementation of industrial policy stress the problem of information. They argue that it is impossible for governments to identify with any degree of precision and certainty the relevant firms, sectors, or markets that should be supported (Rodrik 2007). Since the government cannot have all the necessary information, it can "miss its targets, support economic activities with no positive spillovers, and waste the economy's resources", which is usually phrased as "governments cannot pick winners" (Ibid).

Moreover, it is argued that industrial policy opens doors for corruption and rent seeking (Ibid). If governments provide support to the firms, the firms may demand extra benefits and then distort competition, and they would also engage much more in asking support than they would look for the ways to expand markets and reduce costs (Ibid).

However, as Rodrik points out, "none of this makes this area of policy different from conventional areas of government responsibility such as education, health, social insurance and safety nets, infrastructure, or stabilization" (Rodrik 2007: 36). In other words, the question is not whether a country needs an industrial policy, it is much more about how an industrial policy should be created and implemented.

5. HOW THE INDUSTRIAL POLICY SHOULD BE IMPLEMENTED?

Rodrik argues that the right model for industrial policy is not that of an autonomous government, but of strategic collaboration between the private sector and the government with the aim of uncovering where the most significant

obstacles to restructuring lie and what type of interventions are most likely to remove them (Rodrik 2004). He further argues that "the right way of thinking of industrial policy is as a discovery process, when firms and the government learn about underlying costs and opportunities and engage in strategic coordination" (Ibid: 3). Therefore, the analysis of industrial policy needs focus on getting the policy process right.

Stressing that each country is a specific case, Rodrik outlines three general principles about how institutions carrying out industrial policy should be designed (Rodrik 2007). To begin with, an industrial policy should be "embedded" within society. According to Rodrik, industrial policy should not be seen as a list of policy instruments, but rather as a process of discovery. A close collaboration between the government and the private sector is thus needed. Rodrik argues that the right model for industrial policy lies in between the two extremes of strict autonomy of the state, on the one hand, and private capture, on the other. "It is a model of strategic collaboration and coordination between the private sector and the government with the aim of uncovering where the most significant bottlenecks are, designing the most effective interventions, periodically evaluating the outcomes, and learning from the mistakes being made in the process" (Ibid: 39). He also outlines major institutions in support for industrial policy formulation and implementation, such as deliberation councils, supplier development forums, "search networks," investment advisory councils, sectoral round-tables, and private-public venture funds. He also stresses that contests in which private sector firms bid for public resources are useful for eliciting private-sector needs and priorities (Ibid).

Secondly, using "carrots and sticks" in order to incentive and discipline economic actors is crucial. As it has been already mentioned, an infant industry should be protected for certain period, even though it makes losses. Moreover, innovation requires rents for entrepreneurs, without which there would be too little investment in the activities that promote structural change. In other words, incentives ("carrots") need to be designed for economic actors in order to engage in Shumpeterian activities. However, at the same time firms must be disciplined and it must be ensured that they do not stay unproductive monopolies. In other words, as Rodrik argues "the conduct of industrial policy has to rely on both prongs: it needs to encourage investments in non-traditional areas (the carrot), but also weed out projects and investments that fail (the stick)" (Ibid: 41). Rodrik lists the following mechanisms used in order to bring discipline: conditionality, sunset clauses, built-in program reviews, monitoring, benchmarking, and periodic evaluation are desirable features of all incentive programs, requiring that an incentive expire unless a certain goal is reached. It is important that the evaluation criteria are clear and set in advance (Ibid).

Thirdly, accountability on the part of the state is essential. While business is monitored by bureaucrats, the bureaucrats need to be accountable for their policies and monitored by the general public. Rodrik argues that there need to be identified a person "who has the job of explaining why the agenda looks as it does, and who can be held politically responsible for things going right or wrong" (Ibid: 40). Moreover, accountability can be fostered at the level of individual agencies by giving them clear mandates and then asking them to report achievements and deviations. Finally, a fundamental tool for accountability is transparency. Thus councils should make publications of the activities. Also, periodic accounting of the expenditures made under industrial policies is needed. In addition, any request made by firms for government assistance should be public information and government-business dialogs should remain open to new entrants.

Rodrik outlines ten designing principles of an industrial policy:

1. „Incentives should be provided only to 'new' activities.
2. There should be clear benchmarks/criteria for success and failure.
3. There must be a built-in sunset clause.
4. Public support must target activities, not sectors.
5. Activities that are subsidized must have the clear potential of providing spillovers and demonstration effects.
6. The authority for carrying out industrial policies must be vested in agencies with demonstrated competence.
7. The implementing agencies must be monitored closely by a principal with a clear stake in the outcomes and who has political authority at the highest level.
8. The agencies carrying out promotion must maintain channels of communication with the private sector.
9. Optimally, mistakes that result in 'picking the losers' will occur.
10. Promotion activities need to have the capacity to renew themselves, so that the cycle of discovery becomes an "ongoing one" (Rodrik 2004).

Incentives should focus on economic activities that are new, in terms of products and technologies, to the domestic economy. Thus tax incentives should not be provided for new investments per se without discriminating between investments that expand the range of capabilities of the economy and those that do not.

Although an industrial policy is an experimental process and not all promotion efforts will be successful, certain criteria of the success and failure are needed. It is proposed that the criteria for success should depend on productivity rather than employment or output. This could be done through the project audits by business and technical consultants, as well as benchmarking (e.g. the experience of similar industries in neighbouring countries) and performance in international markets

(e.g. export levels). Moreover, an automatic sunset clause for cancelling support after an appropriate amount of time has passed has to be built-in.

Although traditionally industrial policy has been focused on sectors, Rodrik argues that the targets of public support should be activities rather than sectors. Cross-cutting programs can serve several sectors at once and they are targeted at market failures directly. It is important that those activities that are supported have a spillover effect to subsequent entrants and rivals.

Moreover, it is crucial that the authority for carrying out industrial policies is in agencies with competence. The bureaucratic competence is different in different agencies within the same country. It is preferable that the activities of the industrial policy are facilitated through such agencies instead of creating new agencies from scratch. Moreover, the implementing agencies must be monitored closely by a principal with a clear stake in the outcomes and who has political authority at the highest level. The principal could be a cabinet-level minister, a vice-president, or even the president (or prime minister) himself.

Since the industrial policy is seen as a process of cooperation between the government and the private sector, the agencies implementing it must maintain channels of communication with the private sector. A good communication allows public officials to have an information base on business, without which effective promotional activities are not possible. Despite all the precaution measures, the mistakes that result in 'picking the losers' will occur. However, the costs of the mistakes when they do occur should be minimised.

Finally, the promotion activities need to have the capacity to renew themselves. The cycle of discovery needs to become an ongoing process. As the time passes, some of the key tasks of industrial policy will have to be neglected, while some new taken on. Therefore, the agencies that carry out these policies have to have the capacity to reinvent and renew themselves.
At the end, we will list some of the programmes of the industrial policy. Although we have stressed out several times that each country is a specific case and that the programmes of an industrial policy need to be tailor made, some of the programmes have been historically shown as effective.

Table 1: Industrial policy programs

Programmes	**Description**
Subsidizing costs of "self-discovery"	The criteria for subsidising activities: 1) substantially new activities; 2)potential to provide learning spillovers to others; 3)oversight and performance audits.
Developing mechanisms for higher risk finance	1) development banks; 2) publicly funded venture funds; 3) public guarantees for longer term commercial bank lending; 4) special vehicles that direct a share of public pension fund assets to a portfolio of higher risk investments.
Internalizing coordination externalities	1) coordination and deliberation councils 2) chambers of commerce and industry and farmer and labour associations
Public R&D	1) publicly funded R&D efforts to identify, adapt, and transfer technology from abroad. 2) Programs responsive to private sector demands.
Subsidizing general technical training	subsidizing training for 1) vocational; 2)technical; 3) language skills.
Taking advantage of nationals abroad	Migrant workers in the advanced countries may be valuable as a source of self-discovery at home. Governments can actively encourage their return and use to them spawn new domestic economic activities.

Source: Rodrik, Dani (2004) "Industrial Policy for the Twenty-First Century", Faculty Research Working Papers Series, University of Harvard.

6. CONCLUSION

Industrial policy is seen as a conscious effort on the part of government to encourage and promote activities specific, industry or sector with an array of policies, through the process of cooperation and coordination with the private sector. In this paper, we have argued that industrial policy is an indispensable tool for steering economic development. It is needed both for developing and developed countries. Due to the information and coordination externalities, the productive forces cannot be developed through the market mechanism itself and the intervention on the part of government is needed.

Each country is a specific case and the programmes of an industrial policy need to be tailor made. The right model for industrial policy is not that of an autonomous government, but of strategic collaboration between the private sector and the government with the aim of uncovering where the most significant obstacles to restructuring lie and what type of interventions are most likely to remove them. An industrial policy should be "embedded" within society. The "carrots and sticks" need to be used in order to incentive and discipline economic actors. Finally, the accountability on the part of the state is essential.

Some of the programmes of the industrial policy that have been historically shown as effective are: Subsidizing costs of "self-discovery", Developing mechanisms for higher risk finance, Internalizing coordination externalities, Public R&D, Subsidizing general technical training, Taking advantage of nationals abroad.

REFERENCES

1. Government of Serbia (2011), *Strategy and policy of industrial development in Serbia in the period 2011 – 2020*, Belgrade.
2. Government of Serbia (2013), *Report on Development of Serbia 2012*, Belgrade.
3. Chang, Ha-Joon, (2003a), *Globalization, Economic Development and theRole of the State*, Zed Press, London.
4. Chang, Ha-Joon, (2003b), *Kicking Away the Ladder: Development Strategy in Historical Perspective: Policies and Institutions for Economic Development in Historical Perspective*, Anthem Studies in Development and Globalization, London.
5. Cimoli, Mario, Dosi, Giovanni and Stiglitz, Joseph (2009): "The Political Economy of Capabilities Accumulation: The Past and Future of Policies for Industrial Development" in *Industrial policy and development. The political economy of capabilities accumulation* Cimoli, Mario, Dosi, Giovanni and Stiglitz, Joseph E. (eds.), Oxford University Press, Oxford.
6. DCED (2013), Private Sector Development Synthesis Note, Industrial Policy – The Approach and
7. Hausmann, Ricardo and Dani Rodrik (2003) "Economic Development as Self-Discovery", *Journal of Development Economics*.
8. Mazzucato, Mariana (2013), *The Entrepreneurial State Debuking Public vs. Private Sector Myths*, Anthem Press, London.
9. Radovanovic, Bojana and Kocovic, Milica (2013), *Industrial Policy for Economic Development: Perspectives for Serbia*, published in the collection of papers „Economic science at the crossroads", Institute of Economic Sciences, 2013.

10. Reinert, Erik (2007), *How Rich Countries Got Rich and Why Poor Countries Stay Poor 2007*, Constable & Robinson Ltd. London
11. Reinert, Erik (2009), "Emulation versus Comparative Advantage: Competing and Complementary Principles in the History of Economic Policy" in *Industrial policy and development. The political economy of capabilities accumulation* Cimoli, Mario, Dosi, Giovanni and Stiglitz, Joseph E. (eds.), Oxford University Press, Oxford.
12. Rodrik, Dani (2007), "Normalizing Industrial Policy", Commission on Growth and Development.
13. Rodrik, Dani (2004), "Industrial Policy for the Twenty-First Century", Faculty Research Working Papers Series, University of Harvard.