

‘If it ain’t broke, don’t fix it’: A Critical Realist approach to industrial policy

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Abstract

The resurgence of interest in the topic of industrial policy has been accompanied by an attempt to study it through novel methods of mainstream Economics, within what has been termed the ‘new empirics’ of industrial policy. Such an attempt stands in contrast to the more usual methodology adopted in what we call here the Industrial Policy/Developmental State (IPDS) paradigm. Drawing on the Critical Realist approach to Economics, we show why the methodology adopted in the IPDS paradigm is more adequate for the study of industrial policy than the methodology adopted within the ‘new empirics’ of industrial policy. We also argue that the methodology employed in the IPDS paradigm is quite compatible with Critical Realism, and would benefit from a more explicit engagement with the latter when systematizing its key methodological tenets.

Keywords: Industrial policy, developmental state, new empirics, causality, economic methodology

JEL Classifications: B41; B52; L52; O25.

Introduction

Over the last decade, the world has seen a revival of industrial policy, both in policy and academic circles (Chang and Andreoni, 2020). Developing economies globally have been advancing policies to alter the structure or escape the middle-income trap, as even richer Gulf States have been aiming to diversify their economies for the future away from oil. Likewise, rich countries and regions, such as the United States and the European Union, in the face of increasing competition from China and recent disruptions of global supply chains, have been attempting to use industrial policy to build critical sectors and promote the development of green technologies in which they have been lagging, as attested by the CHIPS Act and Inflation Reduction Act in the US and the European Green Deal (see Shih, 2023).

In academic terms, pro-industrial policy positions have mostly been associated with authors outside the mainstream of the Economics discipline, especially those relating to the industrial policy experiences associated with East Asian Developmental States. Here, we consider those contributions as part of what we call the Industrial Policy/Developmental State (IPDS) paradigm. This paradigm includes notable works of ‘hetedorox’ economists, such as Alice Amsden (1989) and Ha-Joon Chang (1994), but also political scientists, such as Chalmers Johnson (1982), and sociologists, such as Peter Evans (1995), also concerned with the underlying causes of the East Asia Miracle.

Such works, which Antonio Andreoni and Ha-Joon Chang (2019) consider to be the ‘full works’ of industrial policy, are a third phase of a longer tradition on this matter. The ‘first phase’, which consisted of classical works (from the 16th to 19th century) addressed the need to promote manufacturing through a variety of tools and mainly the issues surrounding the protection of infant industries. The ‘second generation’ (broadly 1940 – 1960s) of industrial policy works included much of the early Development Economics,

and were part of core of the discipline of Economics. Those contributions include, amongst others, debates on inter-sectoral dynamics, linkages, the implications of capital and consumer goods for broader methods and balance of payments constraints in the import of technology. The ‘third phase’, or the IPDS paradigm, focused, in addition to the topics above, on implementation issues, competition between domestic firms, and the dynamics of learning, among others.

While most of the defense of industrial policy in academic circles has been associated with the IPDS paradigm, recently there has been a ‘mainstreaming’ of more pro-industrial policy comprising ‘the emergence of some important arguments justifying industrial policy on the basis of Neoclassical economics’ (Andreoni and Chang 2019:138). Nevertheless, Andreoni and Chang (2019:138) note that ‘these supposedly original arguments are rather clumsy translations of old ideas by non-Neoclassical schools into the Neoclassical language’. In this paper, we consider another, even more recent, part of the mainstreaming of industrial policy that is not so much concerned with theoretical issues but rather with empirical ones, which we name here ‘new empirics’ of industrial policy, after the widely discussed paper with a homonymous title by Nathan Lane (2020). One of the most recent contributions amongst these lines by Réka Juhász, Nathan Lane and Dani Rodrik (2023:14), entitled ‘The New Economics of Industrial Policy’ captures well the ambition of this research project. The central claim is as follows:

‘Until very recently, credible empirical evidence on the effects of industrial policy was virtually nonexistent. However, the past few years have seen a proliferation of papers that use careful research designs to evaluate different forms of industrial policy. Though long overdue, the credibility revolution (Angrist & Pischke 2010) has finally arrived to research on industrial policy’

The “credibility revolution” refers to an attempt to address various problems with econometric analysis pointed out by prominent econometricians such as Edward Leamer (1983) and David Hendry (2000) through new applied econometric techniques. The new empirics of industrial policy is essentially about the need of bringing the “credibility revolution” to industrial policy.

Interestingly enough, authors within the IPDS paradigm have found value in the ‘new empirics’ even as the latter have been dismissive of the former¹. For example, Reda Cherif and Fuad Hasanov (2019) in a recently widely cited paper argue that they are working in the IPDS tradition, ‘[b]ased on theoretical, empirical, and historical evidence (in the tradition of Friedrich List, Alice Amsden, Robert Wade, James Fallows, and Ha-Joon Chang)’ (ibid:5), but they also note (ibid:9) that ‘[t]here are relatively few empirical studies on the causal effects of industrial policy, and some recent papers find a positive effect (e.g. Criscuolo et. al. 2019, Juhasz 2018, Kalouptsi 2018, and Lane 2017)’ [the referred papers belong to the ‘new empirics’; note here the conflation of empirical work on causal effects of industrial policy with econometrics].

Robert Wade (2018), a key author in the IPDS paradigm, has also made use of work produced by the new empirics (in this case, Lane, 2017[2022²]) attesting to the effectiveness of the Heavy Chemical Industries programme of South Korea. According to Wade (2018:533) ‘the results for South Korea make it difficult to sustain a common mainstream assertion that the East Asian countries — which had about the best economic

¹ The fact that the new empirics argues that little evidence for industrial policy exists, implicitly dismisses the validity of IPDS works. Juhasz et al. (2023) simply acknowledges this works in a footnote as ‘qualitative literature’:

‘...qualitative literature in social science is immense, see notable contributions by Johnson (1982), Wade (1989), Haggard (1990), Amsden (1992), Chang (1993), Evans (1995), Kohli (2004), and many others’

² This paper has had several iterations. The one used for the remainder of this paper is the 2022 version.

performance in the world in the post-war decades — would have reached even better performance with less ‘government intervention’ in market’.

In this paper we argue that neither does the ‘new empirics’ solve any significant problems with regard to the empirical assessment of industrial policy, nor is that a problem to be solved to start with. We argue that, in fact, the ‘new empirics’, can be quite deleterious to the whole industrial policy project, as it consists of a methodological approach that is fundamentally inappropriate to deal with the object of study being addressed. We also argue the approach traditionally associated with the IPDS paradigm is far more adequate to examine the questions at hand. In the same fashion that much can be lost or subverted when non-neoclassical ideas are translated, misappropriate methods can have a similar effect with regards to conclusions for policy.

To advance these arguments, this paper is organized as follows. In the first part we frame the emergence of the ‘new empirics’ in the broader history of Development Economics, and Economics more generally, focusing mainly on the methodological developments within these fields. In the second part, we address, the issue of causality in econometrics, and argue that the recent developments associated with the new empirics fail to promote any significant advancement with regards to proving causality, or even advance a view of causal explanation that is consistent with the nature of social reality. We argue for a Critical Realist approach to industrial policy highlighting the main principles that such an approach should adhere by. Finally, in the third part of the paper we focus on the IPDS paradigm and argue that, generally, the methodology espoused by these authors, by making use of eclectic approaches to uncover the working of causal mechanisms and attaining knowledge of underlying structures, is implicitly aligned with the principles of Critical Realist inquiry.

Section 2 Framing the emergence of the ‘new empirics’ of industrial policy

2.1 Methodological demands and the ‘drive towards rigour’ in Development Economics

Understanding the emergence of the ‘new empirics’ of industrial policy requires comprehending its place in the history of Development Economics, and Economics more generally, especially with regard to methodology. The first generation of industrial policy contributions, which we alluded to before, predate the birth of Development Economics as a subdiscipline of Economics. This first generation comprises the works of Alexander Hamilton and Friedrich List, who were central in underlining the importance of manufacturing and promoting infant industries and providing early systematic thought on these matters (Andreoni and Chang, 2019). The essence of these early works was incorporated by Development Economics and became a constitutive element of the latter. Development Economics emerged around the end of WWII aiming to address the issues of economic backwardness, and, at its core, early development economists ‘formed a loose school of thought on the issue of economic development, emphasizing a less theoretical and more historical and practical approach to the question of how to develop, particularly in relation to those *who stressed the applicability of neoclassical models*’ (Cypher, 2020:193, emphasis added). Some of the ‘pioneers’ of Development Economics included Paul Rosenstein-Rodan, Ragnar Nurkse and Albert Hirschman, which Andreoni and Chang (2019) consider to be ‘second-generation’ industrial policy scholars. This overlap is not surprising given the shared belief of the early developmentalists that ‘industrialization would release a tide of prosperity lifting all other sectors of the economy’ (Cypher, 2020:194), and many of them played a key role in arguments regarding what the state should do in order to promote industrialization, as exemplified most notably by the ‘big push’ approaches.

An interesting feature of early development economists was, as previously noted, skepticism towards the applicability of Neoclassical models, and the use of an approach that took into account broader historical, social, psychological and institutional factors. This aspect is present even in some more model-based contributions such as Arthur Lewis' (1954) classic surplus-labour article, where considerations regarding the mentality of businesspeople in developing countries are made. One development economist that stood out in this regard was Gunnar Myrdal, as for example, in his *Asian Drama* (1968). As Kanbur (2018, n.d.) notes regarding this opus, its 'main thrust is the need to understand fully the social, cultural and political context when trying to explain economic facts and when developing economic policy prescriptions'. In the same vein, Albert Hirschman most famously emphasized the notion of 'trespassing' to describe his practice of venturing beyond disciplinary boundaries in his quest to understand social phenomena (see Santiso, 2000).

This more pluralistic approach was not necessarily seen in a good manner by the profession. As Andrew Sumner (2006:645) notes in reference to a classical study of the 'economics profession', "'Devlops' – or Development Economists – were viewed with suspicion by the Econ for 'endangering the moral fibre' of the tribe by non-enforcement of the strict taboo against association with Polscies, Sociogs, and other tribes (Leijonhufvud 2000: 5)". Development Economics can also be seen as one of the origins of Development Studies. The more eclectic approach adopted by those authors did not mean a total refusal to adopt formal mathematical methods. In fact, 'big push' approaches, which had at their core the linkages between different sectors, were closely associated with input-output analysis, which had become a core element in economic planning in the Soviet experience (see Elman, 2014). With the wide use of planning in developing

countries in the Post-WWII period (see Agarwala, 1983), there was thus a dissemination of such methods.

But the relevance of this ‘early’ approach to Development Economics became later severely challenged, with the issue of methodology at the core of the challenge. As Paul Krugman notes when referring to the decline of ‘high development theory’ of the late 1950’s in Economics, this was fundamentally related to the mathematical modelling demands of Economics. Development theorists, in his words:

‘were having a hard time expressing their ideas in the kind of tightly specified models that were increasingly becoming the unique language of discourse of economic analysis. They were faced with the choice of either adopting that increasingly dominant intellectual style, or finding themselves pushed into the intellectual periphery’. (Krugman 1994: n.d)

Krugman (1994, n.d.) goes as far as arguing that the most important message of Hirschman’s seminal *Strategy of Economic Development* (Hirschman 1958), appearing ‘at a critical point in this methodological crisis’, had as its most important message a rejection of the drive toward rigor and that ‘[i]n effect, Hirschman said that both the theorist and the practical policy-maker could and should ignore the pressures to produce buttoned-down, mathematically consistent analyses, and adopt instead a sort of muscular pragmatism in grappling with the problem of development’.

2.2 Historical analysis and isolation of causal factors

The discussions above regarding the appropriate method to be used to study development go back to earlier debates. The most famous debate connected to this topic, which

addressed Economics more generally, is perhaps the *Methodenstreit*, a German term that can be translated as battle (or dispute) about methods, used to designate the debate opposing Carl Menger and Gustav von Schmoller (Schumpeter 1954). The key question at stake in that debate is the extent to which Economics can be an exact science with laws that can be applied universally, as Menger argued (despite his scepticism regarding the use of mathematics as a form of achieving it), or whether economic phenomena must always be understood within its specific historical context, as Schmoller argued (Schumpeter 1954).

In Menger's perspective, general economic laws can be reached after the isolation of the simplest elements of reality, rather than through induction based on historical analysis. Schmoller, in contrast, noted the need of locating economic explanations in historical context, since the various causal factors at play cannot be adequately understood in isolation (Schumpeter 1954). Given the need of focusing on the various causal factors as a whole, the method adopted by Schmoller, and by the German Historical School in general, is to focus on the historical development of a totality.

An important element in the analysis of the German Historical School pertains to Friedrich List who was part of the first generation of scholars addressing industrial policy. According to Jun et al. (2016:4), List 'argued that the wealth of a nation was not determined by a single factor' but rather 'a result of complex interactions between economic, institutional, and political factors' and that 'List emphasized the cycle of feedback between individuals, social institutions, and economic environments'. List's historical approach is clear in the very structure of his 1841 opus (*The National System of Political Economy*), as its very first part is dedicated to the historical development of different countries/regions, with the last chapter within this part being named 'The

Teachings of History’, predating the second part of the book, which is dedicated to ‘The Theory’.

Like List, the German Historical School focused on the historical development of a totality, rather than on the effects of isolated causal factors as Menger did. Thus, the *Methodenstreit* addressed already issues which are central to more recent debates on industrial policy – which we will address in the next section – and systematized already what we may see as two main contending approaches to the study of economic phenomena: *the analysis of the historical development of an organic totality (advocated by Schmoller), and the analysis of isolated determinants that can be studied in an exact way (advocated by Menger)*.

The tension between focusing on historical development on the one hand, or isolated determinants (with effects that can be measured exactly) on the other hand, became particularly present in the foundation of Neoclassical Economics, a term first used by Thorstein Veblen (1900) to designate the contributions of Alfred Marshall, in order to distinguish it from the Austrian school of Menger (Lawson 2015). The term ‘Neoclassical Economics’ denotes a tension between new (hence the ‘neo’) methods that Marshall employed to take into account the organicity and dynamics of economic phenomena, and the taxonomic classical methods that, according to Veblen (1900), presuppose more static determinants (Lawson 2015).

Marshall appreciated the historical method and the organicity of socio-economic phenomena (Cook 2009; Martins 2013). But, like Menger, he believed that studying causes in isolation and in an exact way is the more scientific approach (Pratten 1998). This led to a tension in Marshall’s writings, between a vision of an organic reality, and a method that presupposes isolation (Pratten 1998). To address this tension, Marshall (1890) dealt with the problem of multiple causes by distinguishing between direct and

indirect effects. Marshall focuses on the direct effects of a change in one variable X on another variable Y , while assuming that the indirect effects (the effect of a change on variable X on some variable Z which in turn influences variable Y) remain constant, for a time, in a pound called *ceteris paribus*.

The methodological justification for this procedure can be found, according to Marshall (1919), in differential calculus, where we can focus on the direct effect of X on Y while assuming that the indirect effects mediated through Z are negligible since, when dealing with infinitesimally small changes, the product of an infinitesimally small quantity (the change in Z caused by a change in X) by another infinitesimally small quantity (the change in Y caused by a change in Z) is close to zero, and can be neglected.

Not all mathematical approaches in Economics require such assumptions. Piero Sraffa (1926, 1960) adopts a different standpoint, and criticizes Marshall's methodology, noting how changes in economic reality are not infinitesimally small, and so differential calculus cannot be invoked as a methodological justification for isolating direct effects (Martins 2013). Furthermore, focusing on one variation while assuming all other factors to be constant means to distort artificially the proportional relations of a structure. In general, socio-economic structures do not develop through a change in one factor while leaving others constant. Rather, socio-economic structures develop through an organic evolution where all factors change according to certain proportions within the totality, as Marshall (1890) himself noted when arguing that biological analogies are more appropriate for economic than mechanical analogies.

Sraffa (1960) suggests looking at a totality through an input-output framework, so as to take interconnections between sectors into account. A more applied version of this type of approach, which aimed at an analysis of the interconnections between sectors, was key in some of the works of early Development Economists and in the practical

application of their ideas, especially in economic planning, while addressing the proportions between various elements of a structure within the process of development of a totality. But there has been more recently a tendency to move from a more descriptive form of input-output analysis to models of general equilibrium, where various assumption regarding isolation are made drawing on a Walrasian-Paretian framework which has been central to the mathematization of Economics, and used in computable general equilibrium models.

2.3 The mathematization of Economics

While Marshall's approach contains a tension between an organic vision of reality and the use of mathematical methods that presuppose isolation (which must be combined with other methods), the Walrasian-Paretian approach that became subsequently dominant in Neoclassical Economics, in contrast, led to a mathematization of all economic aspects, drawing on Léon Walras' general equilibrium theory, as developed by Vilfredo Pareto (Hicks 1939). Although the Walrasian-Paretian approach apparently focuses on the totality of economic phenomena, it does so by assuming causal effects can be fully isolated and described exactly, so as to be then modelled as a general equilibrium between supply and demand. So the Walrasian-Paretian approach solves the Marshallian tension between an organic vision of reality and the use of mathematical methods by mathematising all relevant economic phenomena. The Walrasian-Paretian approach was subsequently developed by John Hicks (1939), leading ultimately to the neo-Walrasian general equilibrium theory elaborated by Kenneth Arrow, Gérard Debreu and Lionel MacKenzie (Arrow and Debreu 1954).

However, various theoretical inconsistencies were found in general equilibrium theory, which added to other problems such as its highly unrealistic representation of

economic reality (Mas-Colell 1989; Petri 2004). This led to a relative neglect of the more formalistic version of neo-Walrasian general equilibrium at the level of more abstract economic *theory*. However, the mathematico-deductivist *methods* developed in neo-Walrasianism remained influential, together with developments in econometrics (Lawson 2003).

Mathematico-deductivist techniques are those that presuppose the existence of closed systems, which are systems characterized by constant conjunctions of the form ‘if event X then event Y’ (Lawson 1997). Given the widespread use of mathematico-deductivist techniques both in theoretical and empirical Economics, Tony Lawson (1997, 2003) prefers to use the term ‘*Mainstream Economics*’ rather than ‘*Neoclassical Economics*’ to designate the contemporary dominant approach to Economics, since he believes the key defining feature of economic orthodoxy is its mathematico-deductivist method rather than specific theories, Neoclassical or other.

Lawson (2003) argues Cold War McCarthyism in the United States created an academic environment favorable to the expansion of mathematico-deductivist methods in Economics. For mathematical Economics was seen as politically neutral, by focusing on technical aspects rather than on politically sensitive topics. Furthermore, the positivist conception of science that had prevailed until recently, together with the success of mathematical models in natural sciences like physics, led to an approach where the use of mathematico-deductivist methods is taken to be the essential aspect of science.

Thus, whenever disputes concerning economic methodology took place, a tendency emerged to favor the use of mathematical methods. And subjects where political aspects were considered, such as Development Economics (within the second stage of industrial policy scholars), were seen as less scientific than those which drew on mathematico-deductivist methods. In this context, the goal was not just the measurement

of statistical data, but rather the mathematization of economic theory too, to be combined with measurement within the project of econometrics, established through the Cowles Commission in the United States (Lawson 2003).

And since various universities around the world were trying to copy their American counterparts, believed to be more advanced from a scientific point of view, mathematico-deductivist methods were subsequently adopted across the world (Lawson 1997, 2003). The consequence was the neglect of forms of doing Economics that did not embrace the use of mathematico-deductivist methods inspired in natural sciences, leading to the widespread acceptance of the mathematical approach to Economics.

2.4 Mathematization and methodology in action

Despite the façade of political neutrality, the use of a more mathematical approach become subsequently useful for advancing certain policy agendas, given its connection to the idea of ‘rigour’. According to Chang (2002), Neoclassical Economics, as a constitutive element of Neoliberalism afforded the latter ‘scientific respectability’. This ideology was the foundation of the policies advanced in developing countries in the 1980/1990s, associated with the Washington Consensus policies. In addition, what Lane (2020) calls the ‘first-generation’ empirical (econometric) work often employed regressions measuring interventions in the performance of countries or industries – in their analysis of such review, Pack and Saggi (2006:283) note that ‘[f]ew of the empirical analyses find that sectoral targeting has been particularly effective’. The anti-industrial policy stance, justified by such econometric studies became the mainstream in Development Economics, whereas the more relevant studies more favorable to industrial policies – which comprise the IPDS paradigm, to be examined later – remained at the margins of the discipline or were simply set in the Development Studies paradigm.

Development Studies refrained from using a heavy mathematical apparatus, opting for a more eclectic approach, which remained more faithful to the approach of the early Development Economics.

The phenomenon of greater mathematization is also closely associated with what is commonly referred to as ‘Economics Imperialism’ (see Fine and Milonakis, 2009, for a wide-ranging discussion on the matter). As Gary Becker (1976:3 cited in Fine and Milonakis, 2009:33), a major exponent of this movement noted ‘what most distinguishes economics from other disciplines in the social sciences is not its subject matter but its approach’. Grounded on this idea, there is an application of marginalist economic notions to a broader array of social science problems – an ‘economic approach’. In short, this Beckerian approach consists of treating ‘non-market phenomena as if they were governed by a market and, thereby, imposes economic rationality upon them in the form of atomised and optimising individuals’ (Milonakis and Fine, 2009:33). It is also important to underline that this approach stands in stark contrast with the ‘trespassing’ approach of early Development Economics, which rather than having an ‘imposing’ view on other disciplines, tried to interact and gather insights from them so as to better understand development.

New Institutional Economics, according to Fine and Milonakis (2009:78), constitutes ‘one of the most all-embracing examples of economics imperialism’. Its application also displays the pernicious role of the mathematization of the discipline. This is of particular relevance due to the widespread notion that institutions are the fundamental determinant of economic growth, displayed in the influential works of Daron Acemoglu, Simon Johnson and James Robinson (e.g., 2001). According to Chang (2011:1), the support for the mainstream view on institutions, which sees liberal free market institutions as the global standard – including, protection of private property rights, shareholder-oriented

corporate governance, independent central banks and a political system that limits arbitrary decisions by rulers – ‘relies too much on cross-section econometric studies, which suffer from defective concepts, flawed measurements and heterogeneous samples’. The question of measurement is key as, contrary to a tariff or exchange rate, institutions are very difficult or impossible to quantify, and attempts to measure them is through indexes based on survey data, which incorporates a variety of biases. Nevertheless, institutional measurements rely on composite concepts, such as ‘property rights system’, comprising things as diverse as company law, tax law, contract law, bankruptcy law and others, and thus it is questionable, to say the least, that it makes any theoretical sense to add them up (Chang, 2011).

Given that much work on the mainstream of Economics relies on econometrics, it would not be farfetched to say that the creation of such indexes is partly a consequence of the methodology adopted in the discipline. As argued in the next section, such a methodology is clearly inappropriate for the object to be studied. Yet studies are produced, and policies are built around their conclusions. Indeed, this is most likely an example of Abraham Kaplan’s (2017:28) ‘law of the instrument’, positing that ‘[i]t comes as no particular surprise to discover that a scientist formulates problems in a way which requires for their solution just those techniques in which he himself is especially skilled’.

Methodological issues have perhaps even been more critical in the broader study of development issues – especially those within mainstream Development Economics - over the last two decades, with the emergence of the so-called ‘randomistas’ (see Deaton 2010; Deaton and Cartwright, 2018; Ravallion, 2020; Kvangraven, 2022 for a more detailed analysis of this movement and its core ideas). The central element in this line of work – which includes recent Memorial Nobel Prize winners such as Esther Duflo, Abinit Banerjee, and Michael Kremer - is that Development Economics should be more a-political/non-

ideological and focus more on understand ‘what works’ – with a famous analogy of Economics to ‘plumbing’.

The key to understanding ‘what works’ is the method – Randomized Control Trials. In simple terms, RCT randomly separate entities/individuals, between those to which a certain ‘treatment’ – providing, for example, microcredit, extra schooling hours – while not doing so to ‘control groups’, being that the differences between outcomes to be attributed to the policy in question. As Kvangraven (2022:306) notes (2022:306), ‘[b]y randomizing interventions over many units (individuals, households, schools, hospitals, etc.), the idea is that the causal impact of the intervention can be isolated, offering a ‘clean causal inference’ (Gisselquist 2020, p. 1...’. Curiously enough, while physics envy has for long been a major characteristic of Mainstream Economics, in this case it is adjoined by a form of medicine envy (Kvangraven, 2022), as RCTs have historically been widely used in the latter.

2.5 The mainstreaming of industrial policy: squeezing in the ‘new empirics’

In parallel with the previously discussed trends, since the mid-2000s there has been greater attention paid to industrial policy in Mainstream/Neoclassical circles (Andreoni and Chang, 2019). This should not be understood as a continuation of the pluralistic approach that was pursued by early development economists or those working in the IPDS paradigm, which will be discussed later. Rather, this tendency refers to authors which translate previously existing developmentalist arguments into the language and methods of Neoclassical Economics, within what may be seen as yet another case of Economics imperialism along the lines discussed above.

Ricardo Hausmann and Dani Rodrik (Rodrik, 2004; Hausmann and Rodrik, 2006) are two prime examples of this approach in addressing the issues of lack of diversification. Based

on the notion of ‘information externalities’, they argue that first entrants in an industry are not properly compensated by their pioneering effort which signals to other firms the viability of entering such sectors. Based on this, they justify the use of targeted subsidies for these firms, for example, while refraining from supporting protectionists policies, as they do not distinguish between pioneers and followers. Andreoni and Chang (2019) criticize this idea while pointing to a broader ontological problem with the Neoclassical framework when it comes to addressing development. For example, they note that while the use of targeted subsidies is justified within a Neoclassical theory of production where knowledge is perfectly transferable, in reality knowledge acquired by pioneer firms is typically firm-specific and tacit, making it difficult for imitators to ‘free-ride’ on the knowledge created.

The Neoclassical theorization of industrial policy has been more recently accompanied by the emergence of a ‘new empirics’ of industrial policy. In fact, recent co-authored works between some proponents of a ‘new empirics’ and Dani Rodrik (see Juhasz et al, 2023) show how intertwined these two elements are. In short, the ‘new empirics’ of industrial policy – a term coined by Lane (2020) – consists of the application of modern econometric techniques associated with the ‘credibility revolution’ to the study of industrial policy, as authors proposing these advances argue, for example that, ‘until very recently, credible empirical evidence on the effects of industrial policy was virtually nonexistent’ (Juhasz, et al., 2023:14).

The ‘credibility revolution’, as summarized by Angrist and Prischke (2010), consists of the emergence and widespread use of new applied econometric techniques in order to deal with the lack of credibility of empirical work in the discipline, which was long ago pointed out by prominent econometricians such as Edward Leamer (1983) and David Hendry (2000). Another example is the critique of econometric policy evaluation

provided by Robert Lucas (1976: 25), who notes how the former requires the ‘extreme assumption’ that ‘agents’ views about the behavior of shocks to the system are invariant under changes in the true behavior of these shocks.’ Lucas’ critique points out a particular aspect within a more general problem, as noted by Lawson (1995, 1997), who generalised Lucas’ critique into a more comprehensive critique of the mathematico-deductivist methodology of mainstream economics, which is addressed in the next section.

Angrist and Prischke (2010:12) note ‘the hallmark of contemporary econometrics is a conceptual framework that highlights specific sources of variation’, which can be identified and measured as causal factors. To assess the source of variation, in addition to the previously described RCTs, they include quasi-experimental methods such as instrumental variables, differences-in-differences, and regression discontinuity designs. The connection with the ‘gold standard’ of RCTs that we previously alluded is also clear, as Deaton (2010:424) notes that ‘[w]hen RCTs are not possible, the proponents of these methods advocate quasirandomization through instrumental variable (IV) techniques or natural experiments’.

Drawing from these developments, Lane (2020:213) argues, referring to the earlier econometric studies on industrial policy, that ‘[m]ost of these early regression studies do not allow for a causal interpretation’, given for example, problems of endogeneity and reverse causality. Lane (2020:224) notes, nonetheless that ‘contemporary microeconomic methods nevertheless allow us to better understand these policies’. Thus, authors in the ‘new empirics’ note that ‘though long overdue, the credibility revolution (Angrist and Pischke 2010) has finally arrived to research on industrial policy’ (Juhasz et al., 2023:14).

In a summarily manner, what new empirics approaches attempt to do is to assess the effect of a ‘treatment’ – in this case, a policy – on a given outcome. For illustrative purposes,

we provide here two examples of some of the things that two ‘new empirics’ works attempt to do. Lane (2022), attempts to examine the impact of the Heavy and Chemical Industries (HCI) program – consisting of a variety of policy tools, such as loans to stimulate certain sectors - in South Korea during the 1970s. Using a differences-in-differences approach, where non-targeted sectors are used as a control and targeted sectors are the ‘treated’ sectors, Lane (2022:3) concludes that ‘industries expanded their output by over 100 percent more than nontreated sectors, and labor productivity was more than 60 percent higher’ and finds ‘substantial effects of the program on employment growth, export performance, and output prices’.

In the context of a developed country, Criscuolo et. al (2019) address the impact of EU subsidies in different UK regions, using the exogenously defined rules by the EU changes in rules to create instrumental variables. The type of conclusion is of a similar nature that of the paper cited in the previous paragraph: ‘a 10 percentage point increase in an area’s rate of maximum investment subsidy causes about a 10% increase in manufacturing employment and a 4% decrease in aggregate unemployment’ (Criscuolo et al., 2019:49) Despite the apparent novelty of approaches such as the ones just explained, the problems with the econometric methodology adopted persist (Leamer 2010), and it is quite debatable if they add much to knowledge on industrial policy, for the reasons argued in the next section.

Section 3. Causality Revisited: Old bottles in new wineskins?

3.1 The Critical Realist critique of mathematico-deductivist methods

The econometric problems identified in the ‘new empirics’ of industrial policy are not new, and had been noted before by Leamer (1983), also when he responded to the claims of the ‘credibility revolution (Leamer 2010). The issues at stake go back to John

Maynard Keynes' critique of Jan Tinbergen's early econometric methodology (Lawson 1983; Pesaran and Smith 1983). Some of Keynes' points concern whether all factors are considered in the variables adopted, whether those variables are independent from each other, whether the factors they try to measure are quantifiable, or whether the functional form is appropriate (Lawson 1983; Pesaran and Smith 1983).

The problem the 'new empirics' of industrial policy aims to address is essentially that of independence between different causal factors, so that each causal factor can be identified exactly and in isolation, as exogenous 'specific sources of variation' (Angrist and Prischke 2010:12), as noted above. If we go beyond the econometric formulation of the problem, it is a question that goes back to the *Methodenstreit*, and Marshall's early struggles with distinguishing direct and indirect effects drawing on differential calculus, as noted above.

However, the claims of the 'credibility revolution' and the 'new empirics' with regard to having achieved methods that allow for causal inferences remain unfounded. And this is not a problem that 'better econometrics' can solve, but rather a problem with econometrics itself, and mathematico-deductivist methods in general, which are inadequate for addressing the social reality which it aims to study. *Both the ability to isolate an effect and make ceteris paribus considerations are absent in the environment addressed in industrial policy and, arguably, in socio-economic reality in general* (Lawson 1997).

The critical realist perspective has for long pointed out those methodological and ontological issues and their implications for Economics. As noted above, Lawson (1997, 2003), when advancing Critical Realism in Economics, argues that the mathematico-deductivist methods used in Mainstream Economics presuppose closed systems which, as noted above, are systems where constant conjunctions of the form 'if event X then

event Y' are ubiquitous. The problem, for Lawson, is that nearly all scientifically relevant economic phenomena constitutes an open system, that is, a system where constant conjunctions of the form 'if event X then event Y', which are necessary for the success of mathematico-deductivist methods, are not ubiquitous.

In Critical Realism, a distinction is made between: (i) the empirical domain, constituted by our experiences; (ii) the actual domain, which includes the events we experience; and (iii) the real domain, which includes also the structures, powers, mechanisms and tendencies that cause events, and our experiences of them (Lawson 1997). Mathematico-deductivist methods operate at the level of events, correlating event X with event Y. But according to Critical Realism, scientific explanations require going from the level of experiences and events to the level of structures, powers, mechanisms and tendencies.

As argued in Critical Realism, natural scientists identify causal mechanisms because different experiments are conducted, in order to find the conditions under which causal mechanisms are triggered, so as to identify structures, powers, mechanisms and tendencies. But causal mechanisms are triggered only under specific contexts, leading to regularities where event X causes event Y under context C. Contextual mechanisms, which are controlled for in experimental contexts, are then crucial to the emergence of event regularities of the form 'if event X then event Y' under experimental conditions.

However, there are important differences between social sciences and natural sciences, which arise from the different objects of analysis they study. In many natural sciences, it is possible to create laboratory experiments that generate closed systems where those structures are insulated, so that constant conjunctions of the form 'if event X then event Y' arise to be measured. The structures studied by social scientists, in contrast, are the result of human activity.

In Critical Realism, the explanation of human activity draws upon Roy Bhaskar's (1979) transformational model of social activity, in which human action is facilitated or constrained by social structures, which are permanently reproduced and transformed through human activity. This perspective has been further developed by Margaret Archer's (1995, 2015) morphogenetic approach, which explains how social structures appear (morphogenesis) and are maintained (morphostasis) or disappear, at the end of the morphogenetic cycle. For Archer (1995), the three phases of the morphogenetic cycle are: (1) structural conditioning; (2) socio-cultural interaction; and (3) structural elaboration (morphogenesis), which when obtaining stability leads to structural reproduction (morphostasis) – see also Gorski (2015) and De Souza (2022) for further elaborations of generative causal mechanisms drawing on Archer's (1995) approach.

Under this conception, it is possible to explain the genesis and reproduction of social structures. But the latter still leave several possibilities for the human activities they facilitate or constrain. Thus, it is not possible to predict the specific events that will be undertaken by human beings. Rather, social science explains the social structures that set the conditions of possibility for such an action, where the social structures themselves are still subject to faster or slower paces of reproduction and transformation. Given the inherent unpredictability of human action, in the social sciences it is not possible to create closed systems in the same way as in the natural sciences – see also Gorski (2015) on the differences between the natural and the social sciences.

Prospects for randomization that would allow for such, as advanced in the 'credibility revolution', seem rather dubious, to say the least (Deaton 2010; Deaton and Cartwright 2018; Leamer 2010). Thus, in the social sciences we have what may term open systems where, as noted above, constant conjunctions of the form 'if event X then event Y' are not ubiquitous. Under such conditions, mathematico-deductivist methods correlating

event X with event Y are inappropriate, and an hinderance to the development of science which, as noted above, requires going beyond the level of events, towards the identification of structures, powers, mechanisms and tendencies operating in an open system.

Lawson (1997) advances a distinction between abstraction and isolation that allows addressing open and closed systems, respectively. Isolation consists of focusing on one aspect of reality while assuming that it is independent from other aspects (Lawson 1997). Mathematico-deductivist modelling presupposes isolation, which is appropriate when dealing with closed systems. Abstraction, in contrast, consists of focusing on one aspect of reality without assuming that it is independent from other aspects we are focusing on. Since mathematico-deductivist methods imply isolation, abstraction requires the use of a different language, such as ordinary language, to describe the categories employed in our analysis when characterizing structures and causal mechanisms, while highlighting in our narrative the aspects we are abstracting from, and their impact on the more immediate object of analysis, bringing in an element of irreducible uncertainty.

Keynes (1936), whose work on probability and uncertainty was much influential for Lawson's analysis, notes the advantages of ordinary language in this context, and criticizes Marshall's assumption (explained above) that differential calculus can help isolating direct effects from indirect effects. More generally, Keynes criticizes narrower forms of applying mathematics to Economics (which include the use of mathematico-deductivist methods in Economics) which he characterizes as pseudo-mathematics:

“It is a great fault of symbolic pseudo-mathematical methods of formalising a system of economic analysis ... that they expressly assume strict independence between the factors involved and lose all their cogency and

authority if this hypothesis is disallowed; whereas, in ordinary discourse, where we are not blindly manipulating but know all the time what we are doing and what the words mean, we can keep “at the back of our heads” the necessary reserves and qualifications and the adjustments which we shall have to make later on, in a way in which we cannot keep complicated partial differentials “at the back” of several pages of algebra which assume that they all vanish. Too large a proportion of recent “mathematical” economics are mere concoctions, as imprecise as the initial assumptions they rest on, which allow the author to lose sight of the complexities and interdependencies of the real world in a maze of pretentious and unhelpful symbols.” (Keynes 1936: 297-298)

The question then arises as to the role of quantification in historical analysis and case studies. Here we can compare two forms of using mathematics in Economics: the one implied in Mainstream Economics; and the one adopted in Critical Realism (the latter is described in the next subsection).

In Mainstream Economics, models are used not only to explain and predict data, but also to structure a given story or narrative that is shaped by the model employed. Reflecting on this matter, Angrist and Pischke (2010:12) argue that ‘[t]he best of today’s design-based studies make a strong institutional case, backed up with empirical evidence, for the variation thought to generate a useful natural experiment’. However, as previously explained, attempts at modelling constant conjunctions of the form ‘if event X then event Y’ would be helpful only in the presence of closed systems, so that causal factors can be isolated. Since this is typically not the case when addressing the socio-economic systems with which industrial policy is concerned, what we end up finding in approaches

grounded on the ‘credibility revolution’ is constant conjunctions relying on *ad hoc* assumptions for the purposes of empirical measurement.

Furthermore, the model is usually juxtaposed with a narrative of historical events that seems selected equally *ad hoc* to illustrate certain aspects, but leaving the historical categories adopted in the narrative unelaborated, or neglecting important causal interactions. Acemoglu et al. (2001), which Angrist and Prischke (2010) consider the ‘most influential design-based study’ in empirical growth, is illustrative of those problems. For the causal sequence they highlight – settler mortality, settlement, establishment of institutions, current institutions, leading finally to economic performance – is done by a selective and reductionist choice of historical facts. When commenting on the latter, Chang (2011) criticizes the exclusive focus on the causal effect of institutions on development, thus omitting the causal role of development on institutions. Such an omission, however, is necessary if institutions, or the instrumental variable adopted, is to be seen as an exogenous source of variation that can be identified and measured (Acemoglu, Johnson and Robinson 2001). The narrative adopted becomes thus limited, rather than supported or enriched, by the use of mathematico-deductivist models.

If multiple directions of causality were taken into account when applying mathematico-deductivist models, we would find a problem of endogeneity when trying to make such a broader approach fit into an econometric model. This is the reason why approaches relying on the ‘new empirics’, or the ‘credibility revolution’ in general, adopt a more simplistic story, that focuses only on one direction of causation, which is then juxtaposed to the econometric analysis employed.

But using ordinary language as the basis for our analysis, in contrast, we can explain more realistically the multiple directions of causality – such as the ones highlighted by Chang

(2011) in his explanation of how albeit institutions influence development, they are also themselves influenced by the pattern of the development. We cannot measure, however, the isolated effect of each cause exactly, because that is not possible in an open system. This does not mean the analysis we may reach is in any way inferior. As argued in the next subsection, it allows for a more realistic and scientific analysis of underlying structures.

3.2 The critical realist alternative

A more promising alternative is to conduct our analysis drawing on a narrative based on ordinary language that is not necessarily constrained by a mathematical model that presupposes closed systems (Lee 2018), thus allowing for the multiple influences along a development process. Quantitative analysis of a more descriptive type, such as descriptive statistics, input-output tables, and the like, are helpful in this regard, since their more descriptive nature does not impose isolated and exact causal relations of the form ‘if event X then event Y’. In such a case, the narrative is construed drawing on multiple sources, qualitative and quantitative, typically using ordinary language which allows us to keep in mind the various aspects we are abstracting from, and multiple directions of causal influence within an open system.

Furthermore, instead of looking for exogenous sources of variation that can be isolated, a more plausible approach when analyzing triggers of causal processes is to look for specific sectors of activity that are drivers of change, while subsequently analyzing the impact of such sector on other sectors, through linkages, as is typically done in the IPDS tradition. This requires abstraction, by focusing on the sector driving change, but not isolation, since the impact on other sectors, and the role of many of those other sectors

supporting the sectors that act as drivers of change, is taken into account in the historical description, which cannot thus be an exact one as if it were a closed system.

Celso Furtado's (1959) explanation of the Brazilian economy since the European colonial settlement differs much from the unilinear approach of Acemoglu et al. (2001). It is an illustrative example of the approach mentioned in the previous paragraph, focusing on sectors such as those connected to the production of sugar, cotton, coffee and rubber as successive drivers of change in other sectors, and articulating the more quantitative analysis of changes in prices, quantities and population with a study of cultural and institutional aspects connected to the various interest groups involved in each sector of economic activity. We find such an approach in many other dependency theorists, and writers in the IPDS tradition in general.

As noted above, in such an approach we cannot measure the isolated effect of each cause exactly. In an open system, we need to adopt a different method to reach a more realistic and scientific analysis of underlying structures. Lawson (2003) suggests studying social reality through historical analysis and case studies, drawing on a method called *contrast explanation*. Contrast explanation consists of focusing on the causal history of social phenomena, while contrasting it with causal histories of similar social phenomena, and identifying the differences between the various cases studied. This leads to a comparative method often employed in historical analysis (going back at least to List), presupposing open systems, and drawing on a narrative that characterizes the relevant social structures in historical context.

The method used in Critical Realism to identify social structures is retrodution, which is sometimes called abduction drawing on the use of the latter term by Charles Peirce and the pragmatist philosophical tradition. Retrodution (or abduction) consists of moving from the level of events to the level of structures, powers, mechanisms and tendencies, so

as to find causal factors. Retrodiction, in contrast, is a term used in Critical Realism to denote the use of knowledge of structures, powers, mechanisms and tendencies to explain historical events.

While in Mainstream Economics the emphasis is on the correlation of events aimed at predicting future events, in Critical Realism the exact prediction of events is seen as unlikely, and scientific analysis focuses on retroduding structures, powers, mechanisms and tendencies that cause events. *This is why industrial policy has very little (if anything at all) to be gained from econometric analysis (including the one advocated in the ‘credibility revolution’), given the type of structural change considered in industrial policy analysis.* Only by combining statistical analysis with a narrative description of the institutional context that is not constrained *a priori* to conform to closed systems can we reach a more adequate theoretical account of the structures being studied. Thus, there seems to be little reason for abandoning the historical analysis of the economic development of a totality that has prevailed in the IPDS paradigm.

4. Industrial Policy/Developmental State works: a realist approach in practice

4.1 Methodology and Methods

Perhaps one of the most interesting features of works on Developmental States, of which industrial policy is the central element – what have we been referring to as the IPDS paradigm – has been the way in which ideas associated with it have been born and cross-fertilized along the years. This is not to say that within the IPDS paradigm there are no internal debates but, as a whole, it has been a ‘safe-space’ for heterodox intellectuals to build a positive project. As Haggard (2018:3) argues in his comprehensive book reviewing much of the IPDS literature, initial work was focused on the relationship between interventionist policies followed in East Asia and the growth they experienced,

challenging the ‘liberal orthodoxy in the academy and development policy community’ and ‘[l]ed by intellectual outsiders – Chalmers Johnson, Alice Amsden (1989), Robert Wade (White and Wade 1984; Wade 1990/2004) and Ha-Joon Chang’. In addition to challenging the free-market orthodoxy, authors were also concerned with the politics underlying the East Asian Miracle, with Chalmers Johnson himself being a political scientist, as others, and sociologists such as Peter Evans and Ronald Dore also focusing on these matters. Those working more on the ‘politics’ of the Developmental State also stood at the margins of their own discipline, as their largely institutional approach to politics stood in contrast with the ‘rule-of-law’ /property rights view of the dominant ‘New Institutional Economics’ and the formal political institutions that concerned mainstream political scientists (Haggard, 2018).

Methodologically, IPDS works also set themselves apart from the mainstream. As Haggard, (2015:40) notes ‘Johnson, Wade, and Amsden believed that orthodox interpretations of East Asia’s rapid growth were deeply flawed, descriptively, theoretically, and methodologically’. They opted instead for deep analyses of country cases, often going into deeper cases-within-cases in different political/bureaucratic organizations, industries and even firms. This view put a focus on relationality between different elements, as ‘[r]ather than seeking to isolate the influence of discrete causal variables, Johnson and his followers showed how features of these polities and societies combined or were configured in ways that promoted economic growth’ (Haggard, 2015:40).

Much of the IPDS literature – such as the canonical works of Johnson (1982), Wade (1990), Amsden (1992) and Chang (1994) - can be considered part of a Critical Realist paradigm, even though its authors are not explicit about it, since methodological/ontological debates were far from being a concern. In his reflection on

the use of case studies from the Critical Realist perspective, Easton (2010:123) notes that this approach 'is particularly well suited to relatively clearly bounded, but complex, phenomena'. Early IPDS scholars were focused on understanding the East Asian Miracle, particularly how the mechanisms that generated the tremendous growth and transformation of these countries were activated.

In case research, concerning methods, as pointed by Easton (2010:124) the 'choice will be governed by what is thought to be required to establish a plausible causal mechanism, constrained by what data can actually be collected in the research context', and classic IPDS scholars excel in their methodical eclecticism in trying to uncover the mechanisms at work in East Asia. Perhaps the best illustration of such eclecticism is displayed by Amsden (1989) in her study of POSCO in South Korea. In summary, Alice Amsden's study of POSCO is a masterful work that aims at understanding how a large local firm in a key strategic sector was created and kept on learning and acquiring new capabilities, eventually becoming one of the top global players in this sector. The way in which this learning occurs can only be done through the deep descriptions of concrete processes, how they operate in sequence, and accompanied by the evolution of certain metrics (both financial and physical). Amsden (1989) uses a variety of sources and methods including interviews with managers, but also corporate and industry statistical data, both primary and secondary, while also triangulating different sources when necessary to justify her view. Contrary to the dismissal of such works as 'qualitative' by Juhazs et al. (2023), quantitative data abounds in this research, including an analysis of subsidization of POSCO in its early days and its impact in the cost structure, costs of steel, profitability and so forth.

In line with what has previously been noted, the critical realist 'expansion and generalisation come from identifying the deep processes at work under contingent

conditions via particular mechanisms’ (Easton, 2010:126). As Easton (2010:127) notes, while some phenomena can be explained by drawing upon unique mechanisms and contingent variables, others (closer to the natural world) are explicable in rather uniform causal mechanisms, but in most cases most phenomena can be explained by ‘a mixture of the general and the specific’. In those instances, ‘case method has the task of uncovering the structure of underlying reality in each case, investigated to see what can be added to theory in the way of confirmation and articulation’ (Easton, 2010:127). When one more than one case is available and there is ‘heterogeneity, or even uniqueness, of events’ then ‘seeking a credible casual mechanism is the only way to advance theory’ (Easton, 2010:127). Regarding IPDS, each in-depth case aimed at uncovering the causal mechanisms operating in that specific, and the collection of these various specific cases helped with generalisation regarding some principles.

4.2 Generalisation, Replication and Transferability

Despite the fact that IPDS authors generally make the case for a more interventionist approach to economic policy than neoliberal authors, they refute the ‘one-sized-fits-all’ approach of the latter. Different countries in the East Asian Miracle had different approaches to economic policy with regard to specific issues, such as the use of state-owned enterprises, degree and type of engagement with foreign enterprises and focus on public R&D (see Chang, 2006 on this matter) – as Lall (2006:85. Emphasis in original) notes, ‘*there is no general ‘East Asian model’*’. Different countries also had different ‘politics’ with regard to the connection between bureaucracy and political parties and the executive, or different types of forums for public-private interaction. In the end, understanding the East Asian Miracle is not about if X or Y policy worked but about *how*

and *why* policies worked in their specific contexts which allowed for the ‘miracle’ to happen.

The wealth of in-depth case studies regarding the development of these economies allows for the knowledge synthetization that can be employed for what Lawson (2003) terms contrast explanation – the East Asian Miracle cases are often contrasted with other regions where interventionist policies also were ubiquitous in similar periods, such as in Latin America. As Lall (2006:93) points out ‘the analysis of the successes and failures offers important lessons on what to do now’. For example, Lall (2006) notes some of the features that distinguished the East Asian Tigers and many of these are not policies *per se*, but rather broader principles, including, being selective about choosing which activities to promote, promoting export-orientation at an early stage to ‘discipline and monitor both bureaucrats and enterprises’, using FDI selectively in order to build local capabilities, having a flexible approach to policy to learn from mistakes and correct them accordingly. The issue of replication and transferability is closely linked to the methodological approach adopted by the IPDS paradigm. One the major debates in the 1990 with regard to the applicability of East Asian practices to other contexts touched exactly on this point. While it was recognized that indeed East Asian countries had succeeded, this was attributed to the ‘special conditions’, and thus similar approaches should not be employed in other contexts (Andreoni and Chang, 2019). Interestingly enough, as Chang (2006:128) notes, ‘many people who express scepticism about the transferability of the East Asian model are quite cavalier when it comes to the transferability of the market-dominated models of the Anglo-American economies’.

The ‘universality’ issue above relates to a deeper point concerning the view that authors within the IPDS paradigm present regarding what can be learned from the ‘East Asian Miracle’ – interestingly enough it is quite common to find articles in tradition that allude

to ‘learning from’ or ‘lessons from’ the respective experiences. The knowledge that these scholars aim to find is not universalist in the same sense as the neoliberal model – which has to be true given the variety within ‘miracle’ countries - but rather something that requires a more refined treatment.

For example, when discussing potential ‘lessons’ for the UK from East Asia, Chang et al. (2013:45) argue that ‘[i]t should be made absolutely clear right at the beginning that we are not trying to derive from the case studies presented in this study some universal recipes transferable to any country, when each country has its unique political conditions, policy traditions, and economic conditions.’ It is interesting to refer again to the *Methodenstreit* in this regard, since universality was another key issue debated: Menger argued we could find universal laws in Economics, while Schmoller noted that any theoretical results must be seen within their specific historical context, as noted above (Schumpeter 1994).

The issue of transferability is not only considered across places, but also across time, as for example, the applicability of certain policies in a changing global environment (see for example, Chang and Andreoni 2020 and Wade, 2018, on this matter). These types of observations point to the notion of policies and institutions being impossible to understand without reference to context, and how certain mechanisms are triggered are really what matters. But perhaps who better articulated what is, at least implicitly, attempted by the IPDS paradigm with regards to these matters is advanced by Peter Evans (1998:78-79), in his analysis of what can be ‘transferable lessons’ concerning institutions. He argues that

‘If transfer were defined literally as the implantation of replicas of East Asian institutions in developing countries of other regions, then it would make no sense... Achieving analytically similar results in different historical, cultural and

political contexts requires adaptive 'reverse engineering'...Once the idea of transferable lessons is understood as an invitation to indigenous innovation that takes advantage of the underlying analytical logic of East Asian institutions, the possibility of exploiting of the East Asian experience becomes thoroughly plausible.'

And it is at this point that it is essential to underline the fundamental difference with works based in econometrics, including those in the 'new empirics'. The knowledge that is accumulated and synthesized through various case studies comprises a deep understanding of how different processes operate in different contexts, and it is this granular knowledge that is useful to do the adaptive 'reverse engineering' that Evans (1998) alludes to. It is by understanding variety and the interaction of policy with different contexts that we can increase the likelihood of success in adopting (and adapting) certain policies in new contexts. And here it is also critical to link this to a 'practical' idea concerning the East Asian Miracle – that there should be a flexible approach to policy, learn as implementation as policies are put in place, and correct course if necessary. This view conveys at least an acknowledgement that the regularities that are witnessed in other situations might not arise all the time.

By contrast with the above, even if we were to accept that causality could be proven in econometrics, the valuable knowledge that one could draw from that would be close to none. An attempt to prove, as for example Lane (2020) in the 'new empirics' tradition for South Korea, that there was a treatment effect of industrial policy – in short, that industrial policy worked – tells us very little about industrial policy itself and why or how it worked. In such cases, a 'relevant' effect might have been found, 'controls' might have been put in place to account for context, but in the end, this information is of no use when attempting to do the adaptive 'reverse engineering' that Evans (1998) calls for. What

matters when considering a new context is ‘how’ and ‘why’ policies in a different context might have worked and the complex linkages between said policies and context, not that a certain policy X had a numerical effect in context C on variable Y – at most, accepting the implausible proof of causality alluded to in the beginning of this paragraph, the only thing that this effect can show, in general, is that a certain policy *can have* that type of effect.

5. Concluding remarks

In this paper we examined the emergence of the ‘new empirics’ of industrial policy in the context of the broader methodological issues in the discipline of Economics, with a special focus on Development Economics. We argued that, just as there has been a ‘mainstreaming’ of industrial policy in theorization, with non-Neoclassical ideas being translated in Neoclassical language, the ‘new empirics’ is part of this same phenomenon, but focusing on empirical matters. We dispute the grand claims of ‘new empirics’ with regard to having solved the problems associated with causal inference and its ability to ‘prove’ if industrial policies work or not and argued that the long-standing fundamental problem of econometrics with regards to causal inference remains essentially unchanged. We further argued that, in the end, econometric methodology is fundamentally at odds with the nature of social reality and called for a critical realist approach to industrial policy, whose analysis should focus on understanding processes, tendencies and structures and which requires an altogether different methodological approach.

The methodological approach that has historically been favored by the IPDS paradigm is, as we demonstrated, closely aligned with the critical realist approach. In the IPDS paradigm, the emphasis is on the historical analysis of totalities, rather than on the attempt to isolate causal factors, which would supposedly allow us to derive simple economic

laws that can be universally applied regardless of the specific historical context. The historical analysis of totalities presupposes a case of open systems where multiple structures interact, leading to the need of focusing on a given socio-economic configuration as a whole. By focusing on in-depth historical case studies, which allows to grasp the most relevant processes and their workings across contexts, the accumulation of knowledge within this paradigm is one that aims to be focused on underlying structures that co-produce historically situated phenomena and to understand how, within the bounds of uncertainty, policies can be applied in other contexts in a way in which similar mechanisms can be triggered. The granular knowledge that allows for the possibility of ‘transferability’ to other contexts is fundamentally at odds with the econometric, including the ‘new empirics’, approach, which not being focusing on the ‘whys’ and ‘hows’ of policy, can only provide a numerical coefficient. The latter is calculated assuming causal effects can be measured exactly in isolation. Such an assumption is quite unreasonable, and its ‘usability’ in any project focused on underlying structures that co-produce historically situated phenomena is limited, to say the least.

Finally, it is important to note that the infatuation of scholars in the IPDS tradition, such as Wade (2018), may come from a practical concern with legitimizing industrial policy in broader policy and academic settings, given how poorly treated and marginalized those working in this tradition have been. However, it is not difficult for one to imagine that, if studies using ‘new empirics’ methodologies emerged contesting the role positive role of industrial policy in South Korea, for example, that one would believe that Amsden’s (1989) conclusions about the matter would be any less valid. And nothing guarantees that, in the future, ‘evidence’ using this approach won’t accumulate contesting the ‘effectiveness’ of industrial policies. Legitimizing the ‘new empirics’, on top of being inadequate from a fundamentally scientific point of view given the applicability of these

methods in the study of social reality, runs thus the risk of undermining the very project that has been advanced by the IPDS paradigm drawing on appropriate methodologies. Even though IPDS scholars have often shied away from discussions on methodology, it is undoubtable that engaging more deeply with these questions would be extremely beneficial to ‘separate the wheat from the chaff’ and preserving what has been fundamentally been one of the main strengths of the IPDS paradigm as a whole.

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