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Industrial Policy

Old and New Issues

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Abstract

The debate on industrial policy (IP) has been characterized by a number of contractions over the concept of industrial policy, its merits, contents and application. The purpose of this exploratory paper is to review the debate on IP. Outlining the concept and instruments of industrial policy, the paper reviews the evolution of IP over time, and discusses the current tension between the theory and practice of IP. Contrasting 'old' and 'new' issues in the debate, a tentative conclusion is that a fragile consensus on IP is within reach. This implies that the future debate—the 'new' issues—on IP will need to be increasingly concerned with (i) the 'how' of IP rather than the 'why', and (ii) with the new challenges and trends that will shape the content of IP.

Keywords: industrial policy, structural transformation, trade, development, least developed countries

JEL classification: O14, L50, L52, O25, L60, L16, L26, F13, H87

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Author notes

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Acronyms

EC	European Commission
EPZs	export processing zones
FDI	foreign direct investment
ILCs	industrially lagging countries
IP	industrial policy
ISI	import-substitution industrialization
NEG	the new economic geography
NIEs	newly industrialized economies
NSI	national systems of innovation
SEZs	special economic zones
SMEs	small and medium enterprises
SSA	sub-Saharan Africa
TFP	total factor productivity
WGIs	World Governance Indicators
WTO	World Trade Organization

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> Industrialization is *the* way of achieving a more equal distribution of income between different areas of the world.
>
> Paul Rosenstein-Rodan (1943: 202)

1 Introduction

No society can attain high and sustainable levels of per capita income without going through a fundamental process of structural transformation. All advanced and emerging economies have followed this 'stylized fact' of economic development, undergoing transformation from being characterized by low-productivity traditional activities (agriculture) to being exemplified by higher-productivity modern activities (manufacturing and services) (Chenery 1960; Syrquin 1988).

The structural transformation of economies since the industrial revolution has been described as 'immense', accompanied by 'profound social changes' (Bortis 2000: 185). According to Rodrik (2007: 6), 'development is fundamentally about structural change'. Structural change is desirable not only for promoting higher productivity growth and per capita incomes, but also as it brings greater diversity in economic structure, reducing a country's vulnerability to negative external shocks (Naudé, Santos-Paulino and McGillivray 2009).

Table 1 provides a simplified representation of this 'stylized fact' showing that all higher-income economies are characterized by substantial contributions to GDP from the service sector, and considerable contributions from the manufacturing sector exceeding those from agriculture.[1]

The process of productivity-enhancing structural change evident in the outcomes depicted in Table 1 is also known as *industrialization* or *industrial and technological*

Table 1
Sectoral contributions to GDP in various regions, 2000

	Sectoral contribution to GDP (%) in 2000			
	Agriculture	Manufacturing	Services	GDP per capita in 2000 (constant USD)
United States	1.23	16.96	74.61	39,111
Euro Area	2.50	19.89	69.68	20,047
Latin America and Caribbean	5.87	18.23	64.59	8,134
Middle East and North Africa	12.56	12.56	44.13	5,410
East Asia and Pacific	14.64	30.66	41.00	2,723
South Asia	23.88	15.45	50.32	1,644
Sub-Saharan Africa	16.51	14.82	54.17	1,551

Source: Author's calculations based on World Bank Development Indicators (online).

[1] The relationship between the share of manufacturing in GDP and GDP per capita follows a inverse-U shape (Imbs and Wacziarg 2003; Buera and Kaboski 2008) or a S-shape (Weiss 2009). According to Buera and Kaboski (2008: 10), the share of manufacturing in GDP will rise as a country develops, and will reach a turning point. In a sample of 21 countries they find that this turning point occurs at an average per capita income of around US$7,100, after which the relative share declines and the share of the services sector continues to rise.

upgrading (Lin 2009). It is often described as a global process with leading and lagging industrializing countries (e.g., Szirmai 2009), and has generated discussion fundamental to the very core of development economics. These include debate on the sources of total factor productivity (TFP) growth, the extent and determinants of convergence in per capita incomes, the nature of technological progress and innovation, the role of manufacturing in growth and development, the rise of the service sector in value added, of agglomeration, clustering and urbanization, and other issues. Industrialization is, as Krugman (1995) describes it, at the core of 'high development economics'.

One of the most important aspects of these debates concerns the role of government in promoting and/or fast-tracking the process of structural change. Fast-tracking structural change is seen as not only necessary in light of the human costs of underdevelopment, but also as possible, given the potential of lagging countries to leapfrog development by adopting, for instance, technologies from leading countries (Gerschrenkron 1952; Lin and Chang 2009) or from the experience of countries in the successful industrial catch-up after 1950[2] (Szirmai 2009). The way in which governments aim to achieve this fast-tracked structural change is evident from their industrial policy (IP).

The debate on IP has been characterized by a number of disagreements, mainly over the concept of industrial policy and its merits. As Pack and Saggi (2006: 1) note, few phrases elicit such strong reactions from economists and policymakers as that of 'industrial policy'. Largely, these controversies stem from the 'old' issues in IP and industrial development. Indeed, as put by Rodrik (2007: 46), the debate on IP has become 'stale', and 'remains in an impoverished state'. According to Weiss (2009: 1), the controversy over IP has been 'out of all proportion'. As will be shown here, these old issues have been overtaken by 'new' issues that relate, first, to the fact that most countries have engaged in IP in some form or other despite the controversy and second, that concerns about the how (application) and content of IP have moved to the fore.

Consider, for instance, that despite the discord, most countries have *de facto* been implementing industrial policies (Perez and Primi 2009). Thus, industrial policy is 'alive and well' (ul-Haque 2007: 1). In Europe, specific industries, such as biotechnology, medical industries and aerospace industries, are targeted for support, in what the European Commission (EC) explicitly terms 'industrial policies' (EC 2005). Furthermore, 'state aid'[3] is widely used to promote industrial development (Ulltveit-Moe 2008). But often IPs are not fully recognized or even termed as such. A case in point is the United States where resistance to IP is deep, but where industrial policies have been and still are widely and actively pursued (Lazonick 2010) even 'under the table'[4] (Anon 1983).

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2 Szirmai (2009) documents that the rate of catch-up in the late industrializing countries after 1950 was, on average, much higher than that of the USA, Germany, Russia and Japan in the nineteenth century, and that catch-up was accompanied by a rise in the share of manufacturing.

3 In the EU, 'state aid' is the term used for member countries' specific support measures for industries. It is not prohibited by the EC Treaty, and includes grants, tax deferrals, tax exemptions, soft loans, guarantees and equity shareholding. By 2008 state aid amounted to an average of 0.58 per cent of the EU25's GDP (Ulltveit-Moe 2008).

4 As described by Pemberton (2008: 1) in reference to the USA, 'The term industrial policy has been taboo within the leadership of both major parties for many decades, carrying the taint of planned-economy socialism. All the while, of course, we have had a robust defence industrial policy'. Perez

Consider also that the number of challenges in global trends in recent years not only make the 'how' of IP vital, but its content as well. The debate on context, particularly in the industrially lagging countries (ILCs), will have to move, for example, towards considering the implications of the patterns of globalization, the fuel, financial and food crises, the challenge of climate change, the rise of the Asian driver economies and the evolving nature of the entrepreneurial economy. To date, little attention has been given to these issues.

The purpose of this exploratory paper is to re-examine the debate on IP in this light. By reviewing both old and new issues, it is concluded that a fragile consensus on IP is within reach. This implies that the future debate will primarily be concerned about (i) the how rather than the why of IP, and (ii) the new challenges and trends influencing the content of IP.

The next section (section 2) outlines the concept and instruments of industrial policy. Section 3 describes the evolution of IP over time. Section 4 discusses the tension between theory and the practice of IP, while section 5 concludes.

2 Definition, examples and instruments

2.1 Definition of IP

There is no consensus on the definition of IP beyond the fact that it is a guide to government intervention (or 'non-neutrality') in the economy. Many define it as a guide to government intervention to selectively promote certain manufacturing sectors (akin to 'picking winners')[5] with the aim of encouraging a country to 'defy' its comparative advantage[6] and to develop its 'latent' comparative advantage (e.g., Amsden 1989; Chang 2002; Lin and Chang 2009). Among the earliest examples of such intervention are such infant industry protection measures as import tariffs and quotas (see, e.g., Baldwin 1969; Bardhan 1971).

Others consider IP to be not only 'selective' but also—and preferably—'functional' or broad-based, promoting the 'competitiveness' of the entire manufacturing sector (see Lall 2004). Such functional policies have also been described as 'soft' industrial policies (e.g., Devarajan and Uy 2009). Functional policy is often considered as not being limited to the manufacturing sector, but to encompass the entire supply side of the economy, including services and tourism (e.g., Budzinski and Schmidt 2006; Rodrik 2007).

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and Primi (2009) believe that 'industrial policy' is a politically incorrect term in the USA, and Chang (2009: 8) notes that between 1950 and 1980 the USA 'ran a huge if somewhat wasteful industrial policy programme under the guise of R&D support for defence and public health'.

5 A typical definition is given by Pack (2000: 48) who defines IP as 'actions designed to target specific sectors to increase their productivity and their relative importance within the manufacturing sector'.

6 Many of the differences in the current debate on IP relate to comparative advantage. On the one hand are those who argue that it should be based on existing comparative advantage with only small and incremental steps to 'defy' that comparative advantage; on the other hand are those who argue that a much more radical defying of comparative advantage is needed. See, for instance, the debate between Justin Lin and Ha-Joon Chang (in Lin and Chang 2009).

More recently, IP has also been described as a process involving 'dialogue' between the state and the private sector to generate information for identifying and removing the binding constraints to development (Rodrik 2007: 35). In this view, criticism that the state does not have sufficient information to 'pick winners' is seen as beside the point: the process of IP is precisely to overcome such informational difficulties (Hausmann and Rodrik 2003; Rodrik 2004).

For many of the poorest countries it may be useful to retain the focus of government intervention on the manufacturing sector. Certainly, for ILCs, manufacturing can and should be harnessed as an engine of growth and thus an IP that is explicitly concerned with manufacturing makes sense (Buera and Kaboski 2008; Szirmai 2009; Weiss 2009). However, given that the overall more pertinent concern for ILCs (as well as for the advanced economies grappling with climate change) is to foster structural change, and given the usefulness of emphasizing the process and experimentation side of IP, in the remainder of this paper, industrial policy will be understood as *the process whereby governments aim to deliberately affect the structural characteristics of their economies.*[7]

2.2 Examples

Most countries have over time attempted to intervene in promoting their structural adjustment and development through what can be described as industrial policies (Chang 2009; Perez and Primi 2009).

The first and perhaps the most famous example of industrialization is that which took place in the UK in the eighteenth century, the industrial revolution, so called because it revolutionized the world. There is now sufficient historical evidence to suggest that the industrial revolution was not just the fortunate outcome of the operation of free markets. Indeed, Robinson (2009: 3) believes that the industrial revolution was the result of:

> the mother of all industrial policies … a vector of policies which probably constitutes one of the world's most successful, and most consequential industrial policies.

Chang (2009) describes the Walpole government as the first to launch a comprehensive infant industry protection programme in 1721, and De Araujo (1993) outlines the measures taken by the British government to prohibit the export of capital goods until 1843 and the emigration of skilled artisans until 1824 in order to protect its high-technology industries.[8]

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7 This is close to Pack and Saggi's (2006: 1-2) definition of IP as 'any type of selective government intervention or policy that attempts to alter the structure of production in favour of sectors that are expected to offer better prospects for economic growth that would not occur in the absence of such intervention'.

8 Advanced countries still see the protection of their high-technology industries as vital. Hence their insistence of intellectual property rights protection and acceptance and promotion of R&D subsidies as valid and legitimate IP measures, while being opposed to export subsidies for all but the least developed countries. Export subsidies, like R&D subsidies, target a particular activity, but one in which the emerging market countries are strong, unlike R&D.

Following Britain's rapid growth after the industrial revolution, industrial policies were adopted by other major European powers, most notably France and Germany, but also by the EU, USA and Japan in the next century. In Europe, after the Second World War, selective IP played an important part in reconstruction, as also in Japan. As Ulltveit-Moe (2008: 13) notes:

> State ownership and economic planning were key industrial policy instruments. By the end of the 1970s, most Western European states had nationalized substantial proportions of their industries.

In reality, the USA has been one of the foremost examples of industrial policy in action, both in the nineteenth and twentieth centuries as well as today. The development of its steel-rail industry in the nineteenth century is considered an example of successful industrial policy (see, e.g., Harrison and Rodriguez-Clare 2009). As aptly described by Lazonick (2010):

> An understanding of how American capitalism really works calls into question the free market ideology ... In all the advanced economies over the past century, first and foremost the United States' successful entrepreneurship has depended heavily upon government investment in the knowledge base, state-sponsored protection of markets and intellectual property rights, as well as state subsidies to support business investment strategies. ... during the twentieth century, the state of USA has been far more developmental than the Japanese state.

Faced with the recent financial crisis, the USA has continued to resort heavily to what can be described as industrial policy to support recovery.

The extensive use of selective IP in the twentieth century is a well-explored and well-research topic. Consider, for instance, the use of IP by Japan during its re-industrialization after the war, by the East Asian newly industrialized economies (NIEs), East Asian tigers (Hong Kong, Korea, Taiwan, Singapore) and by China (see, e.g., Amsden 1989; Chang 2002; Nelson and Pack 1999; Wade 1990).

Although Hobday (2009) and others caution against drawing over-simplistic lessons from the success of the NIEs, these economies had selective IPs in common (Chang 2009). Emphasis was given to (i) export promotion, (ii) attraction of foreign direct investment (FDI), (iii) the imposition of macroeconomic policies to encourage savings and selective channelling of credit to firms, (iv) the adoption of extensive education and skills formation programmes to facilitate the capacity of their economies to absorb foreign technology and knowhow, including mandatory worker training schemes; (v) the creation of venture capital funds, and (vi) coordination of complementary investments (see Chang 2009 for a discussion). All of these are examples of IP.

The centrality of education and skills formation, and the subsequent absorption of foreign technology through the accumulation of knowledge and technological capabilities, is perhaps one lesson from East Asia's industrial success that resulted in good industrial policy being widely associated with successful innovation. According to a substantial but fairly recent literature (see, e.g., Cimoli et al. 2006; Fagerberg, Srholec and Knell 2007), industrial catch-up is fundamentally dependent on innovation (the

generation of new knowledge)[9] and capability accumulation (Lucas 2008; Dosi 2009). Successful innovation and capability accumulation, in turn, imply the development of 'national systems of production and innovation' (Nelson 1993) that encompass learning, the development of absorptive capacities and an environment conducive to the commercialization of innovations (Cimoli et al. 2006). IPs resulting in successful innovation and capability accumulation include the examples of Finland (associated with the success of Nokia), Japan (for instance, the success of Toyota and Sony) and South Korea (associated with the success of Samsung and Posco).

In these cases, the role of IP is seen as important, particularly in 'defying' the then-current comparative advantage of the respective countries, because catch-up through the development of capabilities accumulation is not automatic (Fagerberg, Srholec and Knell 2007). As Ha-Joon Chang states (in Lin and Chang 2009: 497):

> the market gave Finland, Japan, and Korea unambiguous signals that they should not promote those industries; all the companies in those industries ran losses or earned profits on paper only because they were subsidized by profitable companies in the same business group and/or by the government.

In contrast to the successful examples above, IP is judged to have failed in sub-Saharan Africa (SSA)[10] (e.g., Collier and Venables 2007; Jalilian, Tribe and Weiss 2000; Killick 1978, Lall and Wangwe 1998; Pack 1993; Robinson 2009). Moreover, it is also accurate to point out that although IP was rolled back in the 1980s and 1990s under the auspices of the World Bank and IMF, many African countries subsequently experienced significant de-industrialization of the manufacturing sector that had been built up under earlier IP (Carmody 2009).

IP of the 1950s to 1970s is also widely perceived to have had limited or mixed success in Latin America (Perez and Primi 2009). However, there is considerable controversy with regard to the experience of Latin America after the adoption of 'competitiveness' as part of trade liberalization and privatization under the auspices of the Washington consensus during the 1980s and 1990s. Some see these measures as fostering improvement in technical efficiency and productivity while others find no positive impact. A recent study using longitudinal firm-level data from Brazil, however, concludes that trade liberalization benefited only those firms that received government support to adjust and build their firm-level capabilities. This suggests that IP remains important even after countries open up to trade (Figueiredo 2008).

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9 According to Lucas (2008: 1), the industrial revolution contributed to rapid economic transformation as it made possible—and further enabled—the process of generating new knowledge: 'the industrial revolution involved the emergence of a class of educated people, thousands—now many millions—of people who spend entire careers exchanging ideas, solving work-related problems, generating new ideas'.

10 South Africa and Mauritius are two exceptions (Naudé 2010b). In both countries, government industrial support, including trade protection and export promotion, played a role. The South African government created the largest venture capital institution dedicated to industrialization on the continent (the Industrial Development Corporation of South Africa). Significantly, the country avoided, unlike many other African countries, being subjected to World Bank interference during its industrialization process.

Despite their failure in the post-independence period, African and Latin American countries continue to pay attention to IPs. Indeed, despite the many failures evident also in the Washington consensus approach, IPs may even be experiencing somewhat of a revival in SSA and Latin America, albeit within a more liberalized trade environment. See Rodrik (2007) for a good discussion and examples of recent IP initiatives in El Salvador, South Africa and Uruguay.

The contrast between the industrial success and catching-up of the relatively latecomers to industrialization (China, Finland, Japan, the NIEs) and the industrial failures (in SSA and parts of Latin America) provides a good example of the important differences among regions and countries in the 'how' and the content of IPs. Therefore, the content and application of IPs should be at the centre of the debate. For instance, in Latin America import-substitution industrialization (ISI) policies were widely followed prior to widespread trade liberalization in the 1980s, but with limited monitoring and generally little penalty for failing firms. In SSA, patronage and political interference resulted in low productivity activities being sustained, resulting in large welfare losses (Killick 1978; Robinson 2009). Macroeconomic imbalances (overvalued exchange rates and inflation) further constrained the performance of firms in both Latin America and SSA. In contrast, infant industry protection in East Asia[11] was often accompanied by stringent conditions (such as achieving a particular export target), encouragement of domestic competition, as well as the political will to end support to unsuccessful firms (Hodler 2009; Pack 2000; Robinson 2009) and flexibility when the domestic and/or international context changed (Kaplinsky 1997; Ulltveit-Moe 2008; Weiss 2009). These aspects enabled a much more rapid innovation and capability accumulation to develop in Asia. In fact, Dosi (2009) argues that the difference between East Asia and Latin America in the efficiency of their national systems of innovation (NSI) led to the diverging outcomes.

2.3 Instruments

What are the most common instruments or tools used in IP? Reference has already been made to infant industry protection (also described as import substitution industrialization), subsidies, investment in human capital and technology, export promotion, and the attraction of FDI. Cimoli et al. (2006) classify various IP instruments according to the domain wherein the aim is to support the learning processes of individuals and firms and affect market competition. Seven domains with some overlap between instruments are identified. These are summarized in Table 2.

As this paper unfolds, the rationale for these domains becomes clear, as they are motivated by the market and government failures that prevent industrial catching-up to take place automatically. According to Perez and Primi (2009), governments can assume four roles in these domains, namely a regulatory role, a production role, a consumer role and a financing role.

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11 Note that even though the outcomes in East Asia differ substantially from those in SSA and Latin America, there is no single IP model applicable to all East Asian countries. Despite the commonalities, industrial policies also differed considerably between countries (see, e.g., Hobday 2009; Weiss 2009).

These domains can be considered to operate over different territorial levels and corresponding government levels. A relationship can also be assumed between IP inputs and the outcomes, such as higher firm productivity and environmentally sustainable manufacturing growth.

Table 2
Domains and instruments of IP

Domain	Instruments
Economic signals and incentives	- Intellectual property rights - Price regulations - Exchange rate policy (e.g., undervaluation) - Monetary (interest rate) policy - Countercyclical fiscal policy - Tax breaks
Scientific and technological innovation	- Scientific policies - High-tech lead projects - Funding of university research - Establishment of research centres - R&D subsidies and/or tax credits
Learning and improving technological capabilities	- Education and training policies - Foresight exercises (to identify national research priorities) - Labour training subsidies and/or tax breaks - Skills formation and upgrading schemes - International educational and research collaboration - Incentives for foreign direct investment
Selective industry support	- Impose import tariffs and/or quotas - Provide export subsidies/credit/support - Establish special economic zones - Use of state-owned enterprises/privatization - Create public utilities providing inputs (e.g., electricity) - Directed finance/subsidies - Provide public guarantees - Direct state procurement policy
Selection mechanisms	- Entry and exit regulations for firms - 'Live and let die' principle (Political will to end support to failing firms) - Introduce anti-trust and competition policy - Support national trading companies - Preferential access to finance - Long-term development finance
Distribution of information	- Collective action mechanisms - Promotion of standards - Use of consultative forums - Use of business chambers - Encouraging firm cooperation/firm linkages - Marketing of export industries - Dissemination of successful experiences
Improving productivity of firms and entrepreneurs	- Providing or subsidizing management training - Firm (SME) monitoring and assistance - Infrastructure, funding and management for incubators and cluster formation - Promotion of public-private partnerships - Location marketing and enhancement - Upgrading of economic Infrastructure - Creation of venture capital funds

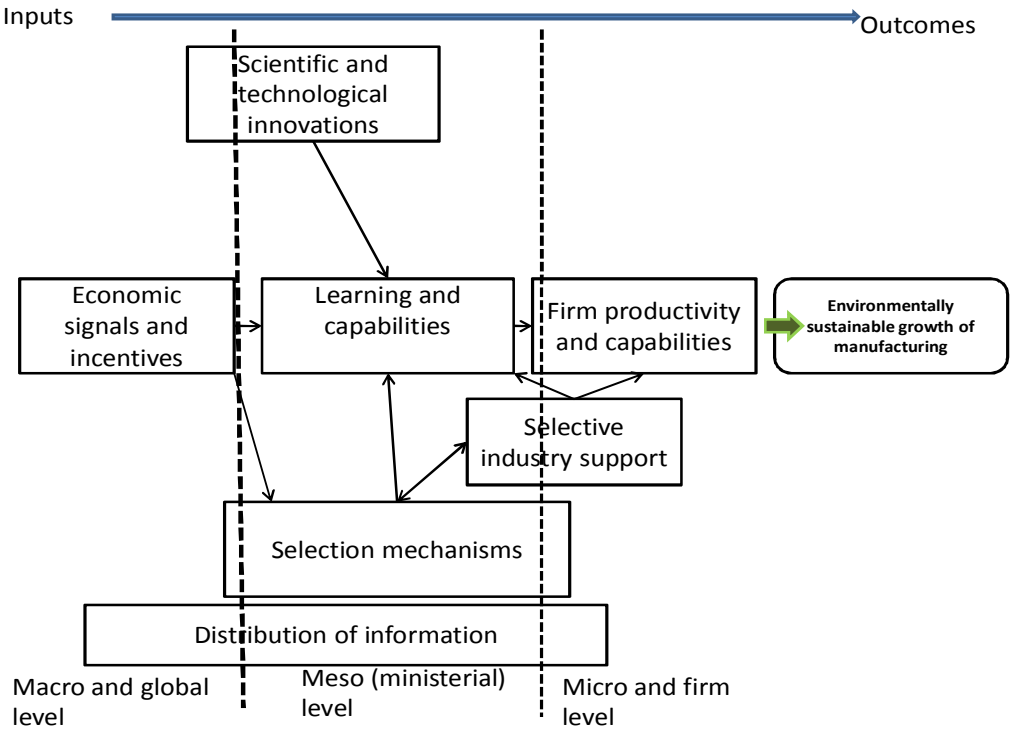
Source: Compiled and elaborated by author based on Cimoli et al. (2006). See also Perez and Primi (2009) for a discussion.

Figure 1 illustrates the relationship between the inputs, outcomes and levels of coordination involved across the various domains of industrial policy.

Thus, the maintenance of appropriate signals and incentives relates more to macroeconomic and international levels, and is primarily the responsibility of the national government in cooperation with international role players. These types of instruments tend to be less discriminatory at the firm level, i.e., more functional or 'horizontal'. They are often also described as being more market-based or soft. Generally, as one moves from the left to the right of the columns in Figure 1, the industrial policy instruments tend to become less market-based (or soft), and more promotional (or hard), although this is not clear-cut.

Figure 1 also shows that the core IPs operate on the meso level. Hence, coordination of learning, science, and capacity-building requires the cooperation of national and local ministries within a country, as many of these measures tend to operate on the meso level, across sectors or industries. Firm-level and selective industry support tends to be more micro-level oriented, and would often call for particular local coordination (for instance, with regard to support for spatially specific clusters). The learning nature of industrial catch-up as well as the nature of the process of industrial policy formulation and implementation necessitates communication and feedback across levels and between outcomes and inputs.

Figure 1
The relationship between the inputs, outcomes and levels of coordination across the various domains of industrial policy



Source: Author's compilation.

3 The evolution of thinking about IP

> Industrialization of the periphery has always been a controversial subject, not only in the centers, but also in the peripheral countries themselves (Raul Prebisch (1959: 251).

Over the past half century, the debate on IP has intensified at certain points in time. Table 3 summarizes the main phases of IP's evolution and application since the Second World War.

The debate on IP was intensive after the Second World War during the reconstruction of Japan and Europe as well as after the independence of many of the colonies in Africa, Asia and Latin America. At that time, IP concerns such as coordination failures, economies of scale, and demand insufficiencies were at the centre of development economics (see e.g., Gerschenkron 1952; Hirschman 1958; Nurkse 1952; Rosenstein-Rodan 1943; Scitovsky 1954). Governments widely adopted very selective interventions, for example, making extensively use of infant industry protection measures such as import tariffs and quotas.

Table 3
Evolution of theory and practice of industrial policy

Phase	Key ideas	Representative contributors
1940s to late 1960s	- Industrialization is necessary for development. - Market failures would prevent this from happening automatically. - Market failures are pervasive in developing countries. - IP is needed, particularly infant industry protection, state-ownership and state coordination.	Rosenstein-Rodan (1943) Hirschman (1958) Prebisch (1959) Myrdal (1957)
1970s to 1990s	- Practical obstacles to IP are considered significant. - Government failure is worse than market failure. IP is invitation to waste and rent-seeking. - Trade liberalization (exports), privatization and attracting FDI together with macroeconomic stability and minimum government interference are the basic requirements for growth and industrialization. - The era of the Washington consensus, especially after the debt crisis of the early 1980s and the ubiquity of structural adjustment programmes (SAPs).	Baldwin (1969) Krueger (1974;1990) Pack (1993; 2000)
2000s to present day	- Market and government failures are present. - The 'how' rather than the 'why' of industrial policy is important. - Institutional setting matters but design difficult. Need to understand political context. - Flexibility in the practice of IP is important. - Differences exist with respect to the extent to which comparative advantage needs to be defied, not the principle. - Innovation and technological upgrading should be a central objective of industrial policy. - Promoting national innovation systems should be an important objective of IP.	Amsden (1989) Dosi (2009) Rodrik (2004; 2007) Chang (2002; 2003; 2009) Lall (2004) Lin (2009) Nelson (1993) Robinson (2009).

Source: Compilation by author.

By the 1980s, coinciding with the free-market ideologies of the Reagan[12] and Thatcher governments in the USA and UK, respectively, the IP debate peaked again but with the pendulum swinging in the opposite direction. Now IP was perceived to be impossible because of government failure and the danger of degenerating 'into an orgy of corruption and detrimental rent-seeking' (Hodler 2009: 85). According to the Washington consensus which dominated orthodox thinking and policy advocacy in development economics at the time, government intervention was to be limited to a 'narrow set of market failures' (such as education and infrastructure), and the widely advocated elimination or reduction of import restrictions and state-owned enterprises (Deraniyagala 2001). In countries where governments went beyond the liberalization of trade (rolling back tariff protection) and privatization of state-owned enterprises as prescribed in the Washington consensus, industrial policies now tended to be less selective and discriminatory. These were often known by other labels such as competitiveness policy (especially in Latin America) or productivity-enhancing strategies.

After the East Asian financial crisis of 1997-98, the IP debate flared up once again, when its role in the crisis was being assessed. Pack (2000), for instance, points to concerns that the financial crisis was partly due to earlier IPs which had resulted in banks making direct loans to unprofitable sectors. Assessments such as these further strengthened the position of the IP-sceptics, and by 2004 Lall (2004: 4) declared: 'The new consensus seems to be that all selective industrial policy is economically undesirable and harmful'.

There was a similar resurgence of the IP question after the 2008 financial crisis. The difference now was that the pendulum was starting, albeit slowly, to swing back to the earlier position of an openly acknowledged need for a more selective IP. Here, two trends are of particular importance.

The first is the failure in much of sub-Saharan Africa to industrialize under the structural adjustment policies of the Washington consensus (Carmody 2009; Jalilian and Weiss 2000).[13] There is a growing literature pointing to the inadequacy of trade liberalization itself, which may lead to allocative efficiency (static gains) but not automatically to dynamic (or growth) efficiency (Fagerberg, Srholec and Knell 2007). Thus, the Washington consensus approach fails to appreciate the friction in the responses of entrepreneurs and institutions, particularly with regard to absorbing technology, innovation and learning (Deraniyagala 2001). It is assumed that knowledge will automatically and without friction flow to developing countries. This fails to recognize that it 'needs to be combined with sufficiently developed absorptive capacity or social capability (Fagerberg, Srholec and Knell 2007). Recently, Aghion (2009) has offered a theoretical endogenous growth model to illustrate that trade liberalization can inhibit industrial development in small, lagging countries because it dampens the

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12 Ironically, as ul-Haque (2007: 7) notes: 'it was under the Reagan administration—the foremost champion of neoliberalism—that the Harley Davidson Motor Company and Chrysler Corporation were saved from bankruptcy'. It was also the Reagan administration that requested Japan to voluntarily restrict its exports of motor vehicles to the USA in order to protect the domestic motor vehicle industry (Perez and Primi 2009: 28).

13 Zambia serves as an example of a striking country and sector case: the number of textile manufacturing firms declined from over 140 in 1991 to only 8 by 2002 (Carmody (2009: 1197).

incentives for innovation, imitation and learning-by-doing. There is growing apprehension that trade liberalization has contributed to deindustrialization (as measured by the falling shares of employment and output in manufacturing) in Africa and other developing countries (Carmody 2009; Tregenna 2009).

The second is the global financial crisis of 2008. The nature of the financial crisis—which is generally acknowledged to have been caused by regulatory capture in the USA in combination with global imbalances in savings and consumption (see, e.g., Johnston 2009a; Stiglitz 2009)—has illustrated that the problem is not IP *per se* but rather the nature of IP, the type of IP. Indeed, it was the very content and nature of what could be described as 'industrial policies' that favoured the rise of the financial sector in the USA (and which could be traced back to the deregulation of the 1980s and 1990s) that contributed to massive market failure (Ely 2009; Leonard 2009; Stiglitz 2009).

Recovering from the crisis and avoiding similar incidents in the future does not imply an attempt to abandon IP, but rather to improve it. As Johnson (2009b) implies, IP is vital for recovery, as 'global economic growth requires a rebalancing away from the financial sector and towards nonfinancial industries such as manufacturing'. Hence, whereas industrial policies exposed government failures in many countries in the 1960s and 1970s, the 'industrial policies' of the 1980s and 1990s have now exposed market failure.

Prior to the triple crises, much of the recent IP discussion centred on the issue of the extent of IP, not on whether it was justified or not. Many of the earlier opponents of IPs now seem to support (as in the EU) 'soft' IP, which is seen as more functional and horizontal, and less distorting (Harrison and Rodriguez-Clare 2009). As explained by the chief economist of the World Bank, the position seems to have moved in favour of a 'Goldilocks' IP wherein countries defy their comparative advantage only a 'little bit, but not too much' (Lin in Lin and Chang 2009). Similarly, Hodler (2009) considers IP as entirely feasible as long as it is 'modest', and is based on a 'small budget' that does not offer much benefit to unproductive firms. The differences between the proponents of a cautious, limited approach to IP, and those who support a much more drastic intervention remain fundamentally based in the tension between the theory and practice of IP.

4 The tension between theory and practice

This section briefly reviews the tension between the theoretical and practical arguments for IP and the concerns about the feasibility of governments to actually embark on IP. Given that a strong argument exists for IP and that IP is unavoidable, the debate should be more vigorously concerned with the content *and* the application of IP.

Both the *content* and the *application* of IP are important: recent contributions to the debate have either stressed its application (through the institutional prerequisites to avoid government failure) (e.g., Cimoli et al. 2006; Robinson 2009; Rodrik 2007) or differed only on the *content* of IP (e.g., the debate between Justin Lin and Ha-Joon Chang in Lin and Chang 2009). Rodrik (2007) advocates an approach in which institutions and process are more important than content, because content is country-specific and there are 'many recipes'. However, this fails to appreciate the fact that

content has been crucial in many of the cases of acknowledged industrialization success and failure[14] (see, e.g., Lall 2004). Moreover, content is important as it has to relate to the current challenges that create specific opportunities as well as threats for structural transformation. If IP content and the nature of these opportunities or obstacles are not aligned, industrial outcomes may be compromised just as seriously as if the institutional support were lacking. Thus, a part of the 'new' issues in future IP debates should include the content of policy.

Moreover, it is argued that the future IP dialogue should take into account the particular problems and institutional frameworks of countries to ensure that the types of IPs selected are appropriate for the relevant country and that these are implemented effectively. As these issues have been relatively neglected in the recent IP debate, they should form the core of future research.

4.1 Theoretical case for IP

There is a strong theoretical case for IP, based on the need (i) to correct market failures and to go beyond correcting market failures and indeed (ii) to create a deliberate market failure/distortion to achieve a particular industrial outcome and (iii) to overcome coordination failures. These three arguments are briefly reviewed in what follows.

Correcting market failure

Market failures are due to positive externalities inherent in certain economic activities. In the context of structural transformation, five types of economic elements have received particular attention: exporting, foreign direct investment (FDI), manufacturing, general informational deficiencies, and entrepreneurial entry.

Consider possible market failures in exporting. It is well-known that the more firms export, the higher the rate of learning-by-doing may be, with positive spillovers to the domestic economy through information on export opportunities, knowledge of export markets and labour turnover (see, e.g., Alexander and Warwick 2007). A fairly robust result from the empirical literature is that exporting firms tend to be more productive than non-exporting firms and that causality often runs from exporting to productivity (e.g., Foster 2006; Mengistae and Pattillo 2004; Van Biesebroeck 2005a, 2005b). Higher growth and productivity are associated not only with the extent of exports, but also *what* is exported (Hausmann, Hwang and Rodrik 2007) and *to which country* (Park et al. 2008).[15]

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14 Lall (2004), for instance, argues that Africa's failure to industrialize is partly due to a choice of wrong IPs, not just rent-seeking and corruption. For example, African countries tended to under-appreciate investments in physical infrastructure, human capital formation, made entry and exit for private sector firms difficult, maintained inconsistent macro-policies, and made wrong interventions in technology transfer.

15 A number of existing studies find a positive relationship between export diversification and economic growth (e.g., De Ferranti et al. 2002; Al-Marhubi 2000; Herzer and Nowak-Lehnmann 2006; Hausmann, Hwang and Rodrik 2007; Matthee and Naudé 2008; Funke and Ruhwedel 2005). Feenstra and Kee (2004) find that a 10 per cent increase in export variety in the industries of a country raises its productivity by 1.3 per cent.

Due to the combination of sunk costs in exports (Roberts and Tybout 1997) and the positive spillovers discussed above, entry into export markets may be suboptimal, making a case for government intervention. Typically these can include measures such as subsidizing exports, marketing a country's exports[16] and assisting firms in foreign market research (Alexander and Warwick 2007; Rose 2007), as well as certifying or establishing product quality which is often unknown in foreign markets (Bagwell and Staiger 1989). Often, these support measures are provided in geographically concentrated areas known as special economic zones (SEZs) or export processing zones (EPZs) (Devarajan and Uy 2009). Many case studies have detailed the pervasiveness of export support in the success of the East Asian NIEs (e.g., Westphal 1990). Many Asian countries (South Korea is a good example) made tariff support for local industries conditional on achieving certain export targets (Westphal 1990; Lall 2004).

Similarly, encouraging FDI may result in knowledge spillovers to local firms, labourers and consumers. Indeed, the attraction of FDI was a central plank of IPs in the economies of the East Asian tigers (Singapore and South Korea) where the local entrepreneurial capacity was judged to be lacking (Lall 2004). Correcting this market failure, therefore, justified the use of tax breaks, relocation allowances, assistance in information and provision of infrastructure and other business services to foreign firms. Almost all countries today have investment promotion agencies (Rodrik 2004).

A third argument for spillovers that facilitate structural transformation is based on the recognition that the manufacturing sector itself is 'different' (say, from agriculture), as it can generate positive externalities (Szirmai 2009; Tregenna 2009). To be specific, the manufacturing sector is seen as brimming with Marshallian externalities due to knowledge spillovers within the industry (technology diffusion), linkages (backward and forward) with the rest of the economy, dynamic economies of scale, and labour pooling[17] (Harrison and Rodriguez-Clare 2009; Tregenna 2009). Empirical studies find the manufacturing sector to be the most important source of growth in developing countries, as it was for the current advanced economies over the years 1950-73, prior to the rise of the services sector (Szirmai 2009).

Moreover, manufacturing activity, to a greater extent than agriculture, can cluster, increasing the proximity between economic agents, which, in turn, increases the magnitude of spillover effects. Rosenthal and Strange (2005), estimating the size of such agglomeration externalities, suggest that they are significant.

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16 The rise in the number of export promotion agencies in developing countries has been significant in recent years (Lederman, Olareagga and Payton 2006). One of the functions is to market a country's export basket abroad and to identify and disseminate information about export opportunities. The justification for the latter role is based on the notion that 'the public-good nature of certain information suggests the market might not provide it in sufficient quantities' (Alexander and Warwick 2007: 181). This information dissemination and marketing role may be important: Lederman, Olareagga and Payton (2006) find that each additional dollar devoted to export promotion results in an US$300 increase in exports for the median EPA. According to Rose (2007: 23), the number of foreign missions of a country is positively correlated with its exports. He notes that each additional consulate in a country increases exports to that country between 6 and 10 per cent.

17 As put by Rosenstein-Rodan (1943: 202), 'There are no mortgages on workers—an entrepreneur who invests in training workers may lose capital if these workers contract with another firm'.

Because of these pervasive externalities, countries without a substantial manufacturing sector should support its formation and growth, particularly since substantial learning-by-doing is a prerequisite for proficiency in manufacturing (Young 1991). In the past, this was often accomplished by protecting the domestic manufacturing sector through tariffs,[18] a strategy also known as *infant industry protection* or *import substitution industrialization* in which the explicit objective was to produce manufactured goods that had previously been largely imported. The infant industry argument has been formalized by Bardhan (1971), Young (1991), Greenwald and Stiglitz (2006) and more recently by Aghion (2009).

Much has been written about infant industry protection. In theory, there is agreement that it can bring about welfare-enhancing structural change (i) if the protected sector, in time, will be able to survive without protection (i.e., the 'infant' industry matures), and (ii) if the discounted future benefits achieved through protection exceed its costs (Harrison and Rodriguez-Clare 2009). There is also a strong case to support the view that infant industry protection through tariffs may not be optimal, and that direct subsidies would be more appropriate (Baldwin 2003; Pack and Saggi 2006).

The above conditions are difficult to induce, and may not automatically be achieved without additional support to industries. For instance, a protected firm or industry may survive and grow but has only limited externalities if it retains outdated technologies, fails to link with other sectors, or to improve skills or labour pool. In this instance, the requirements of firm-specific learning strategies may justify selective intervention (Aghion 2009; Deraniyagala 2001).

Lall (2004) argues that to offset the anti-export bias inherent in infant industry protection, additional policies, such as export promotion, may be needed. He also notes that import tariffs can lower the incentives of firms to invest in technological capabilities, crucial for technological adoption and productivity growth.[19] Saure (2007) has also taken up this criticism recently, arguing that infant industry protection can cause domestic firms to substitute advanced technologies with low-productive traditional technologies wherein learning and spillovers are much less. In such cases, additional nudging may be needed in the form of coordination, R&D subsidies and tax breaks or even direct subsidies (Harrison and Rodriguez-Clare 2009).

Based on an analysis with an endogenous growth model, Aghion, on the other hand, (2009) argues that the absence of import protection in small developing economies may lower the incentive of firms to invest in innovation and learning-by-doing. This is

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18 While tariffs (and quotas) on imports were and are still often used to support local manufacturing firms by sheltering them from competition, a production subsidy would theoretically be superior, as it does not lead to deadweight consumption losses as in the case of a tariff or quota.

19 Technological capacity is an important concept in growth theory, where technological innovation is central to productivity growth (see also Cimoli et al. 2006). Hence, as was implied by the IP instruments outlined in section 2, much of the practice of IP has shifted towards technological innovation, imitation capabilities accumulation and adoption (see also Dosi 2009). Lall (2004: 5) describes technological capabilities as the skills firms 'need to utilize efficiently the hardware (equipment) and software (information) of technology'. The important point is that these are firm- and sector-specific so that support for such capabilities will rarely be effective if not specific. As Ha-Joon Chang states 'technological capabilities are acquired in an industry-specific manner through actual production experiences' (Lin and Chang 2009: 494).

similar to observations by Bardhan (1971) who models the learning-by-doing of protected infant firms. Whatever the actual impact of protective measures on innovation and learning-by-doing are, it is recognized that investment and innovation in technology may be suboptimal due to the fact that the investor or inventors cannot capture all the rents from it.

A fourth and related argument based on market failure sees these as due to the nature of information, with informational asymmetries as potentially constraining industrialization. In particular, this would lead to failures in capital markets, so that only insufficient long-term development funding or venture capital is available (Budzinski and Schmidt 2006). This argument has been used to justify intervention in credit markets, such as the creation of venture capital funds or development banks for direct long-term lending (Deraniyagala 2001; Budzinski and Schmidt 2006).

Finally, a more recent argument based on market failure considers entrepreneurial entry (by starting up a new firm, or adopting a new innovation) as suboptimal due to the externalities generated by such entry. According to Hausmann and Rodrik (2003), entrepreneurial entry in developing countries generates information on the possible latent comparative advantage of a country. Thus IP becomes a process of 'self-discovery' of what the economy might be good at producing. Because leading/early entrants absorb the costs (but not necessarily the benefits) of early entry, entry itself may be suboptimal. Forms of IP to promote such 'self-discovery' could be support for small and medium enterprises (SMEs) for innovation, and for new firm start-ups (e.g., by reducing regulations and requirements and/or providing subsidized credit).

Deliberately creating market failure

Some have argued that IP is justified for creating a deliberate market failure, for instance, by 'getting the prices wrong' (Amsden 1989). Related to this, the following views have been offered: markets may either be 'too efficient' so that monopolies are needed (ul-Haque 2007) and/or that the mere removal of market failures will constrain a country to specialize in its current comparative advantage (Perez and Primi 2009) and that IP can prevent a more extensive market failure by creating a minor market distortion (Hart 2001).

In terms of over-efficient markets, it is argued that a mere correction of market failure is not enough because it is based on a misunderstanding of the nature of the firm (Lazonick 2010). Traditional theory, where the case for intervention on the grounds of market failure rests, is based on the textbook model of competitive markets that is 'seriously flawed' (ul-Haque 2007).

As far as specialization based on a country's comparative advantage is concerned, there are two strong arguments criticizing its use to guide a developing country's IP. First, as argued by Dosi, Pavitt and Soete (1990), ILCs produce within the world technological frontier where comparative advantage (and measures such as trade liberalization which improves allocation according to comparative advantage) may lead to static (allocative) efficiency,[20] but at the cost of growth efficiency. Second, traditional trade theory's recommendation that a country should specialize according to its comparative

[20] According to Deraniyagala (2001), the literature has found these static gains from trade liberalization to be small; in the vicinity of 2 to 3 per cent of GDP.

advantage might not hold under uncertainty, as Brainard and Cooper (1968) point out. Uncertainty reduces world trade overall, as risk-averse producers of primary commodities limit their production thereof (Ruffin 1974; DeRosa 1991).

Overcoming coordination failures

Paul Rosenstein-Rodan (1943) argues that the industrialization process in Eastern Europe after the Second World War would not have been automatic, as these countries were caught in a low-level equilibrium trap,[21] resulting from coordination failures. Therefore, in the view of Rosenstein-Rodan and others, governments need to coordinate to ensure a 'balanced' approach to development, as through a 'big push'. Rosenstein-Rodan's (1943: 204) assertion that, 'The whole of industry to be created is to be treated and planned like one huge firm or trust' implies an encompassing set of industrial policies.

Many argue that ILCs today are similarly caught in a low-level equilibrium trap due to coordination failures (e.g., Murphy, Shleifer and Vishny 1989). Buera and Kaboski (2008) have recently emphasized that coordination is needed particularly for technology that leads to increased productivity in the optimal scale of production, such as electricity, mills and assembly lines, but which often require high initial fixed costs such as credit facilities, inter-sectoral coordination, and mass consumer demand.

Altenburg (2009) observes that coordination is particularly difficult for the latecomers to industrialization. He illustrates these difficulties with a good example (2009: 30-31):

> Take the example of a country with promising location and agro-ecological conditions for horticultural exports. Even if the country offers excellent investment climate and investors recognize the potential of the country, they typically start off with lacking irrigation; bad roads; no cool chains facilities in place; no high quality inputs and specialized technical support services available; inefficient ports and airport facilities; high freight rates due to low trade volumes, etc. Developing all the necessary infrastructure facilities and services simultaneously usually far exceeds the possibility of individual investors. Unless a major coordinated effort is organized to develop complimentary assets ... the potential for horticultural exports will remain unexploited.

In the early days of development economics, other researchers also recognized coordination failure as an important obstacle to industrialization but did not consider a balanced 'big push' approach as necessary or feasible. Fleming (1955) and Hirschman (1958), for instance, saw the promotion of key sectors (those with forward and backward linkages) as being sufficient to get industrialization going. In more recent years, these concepts have been formalized within the new economic geography (NEG) literature (Mayer 2004; see also, e.g., Krugman 1995; Ottaviano and Puga 1998; Deichmann et al. 2008). Here forward and backward linkages in manufacturing lead to increasing returns to scale with positive externalities: the higher output growth, the

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21 'If the industrialization of depressed international areas were to rely entirely on the normal incentive of private entrepreneurs, the process would not only be very much slower, the rate of investment smaller ... the whole economic structure of the region would be different' (Rosenstein-Rodan 1943: 206-7).

higher productivity growth. When there are trade costs, firms will locate or cluster in large markets (Mayer 2004) which become self-reinforcing (cumulative causation). Because of this self-reinforcing nature, ILCs may need to kick-start the process with the government stimulating the agglomeration or cluster of manufacturing activities through coordination.

More recently, both Rodrik (2004) and Ulltveit-Moe (2008) have re-emphasized the importance of coordination failure as hindrance to industrialization. Rodrik (2004), in particular, argues that coordination failures constitute one of the strongest cases for IP, as coordination failures are more 'rampant' than other types of market failures. He points to the fact that coordination measures are specific to each industry, so that setting up a horticultural industry will require different coordinating activities than establishing, for example, motor vehicle industry.

Ulltveit-Moe (2008) also stresses the continued importance of using IP to overcome coordination failures. Her concerns emanate from the significance of agglomerations (clusters) of economic and industrial activity for productivity. Globalization makes the possibility of coordination failure more acute, because it determines the spatial location of industry and hence the catch-up potential of ILCs, not all of which will automatically benefit (see also Mayer 2004; Forslid and Midelfart 2005). However, Collier and Venables (2007) presume the clustering of economic activity to mean that government coordination of supporting infrastructure and services can be focused in a particular geographic area without being provided across the entire country, thus making it potentially less costly. And as Rodrik (2004) points out, coordination can be achieved without the need for large financial outlays for direct subsidies. Often government information, communication, persuasion and guarantees can unlock the simultaneously needed private sector investment.

4.2 The case against IP

The concerns against IP are mainly practical (Aghion 2009; Harrison and Rodriguez-Clare 2009). These stem from the apprehension that (i) governments lack the information and capability to select and promote the sectors that may have a latent comparative advantage; (ii) IPs are an invitation to rent-seeking and corruption (Hodler 2009); and (iii) that there seems to be little empirical (econometric) evidence to indicate that IPs have worked. Furthermore, (iv) some have voiced the fear that technological progress and globalization have reduced the potential of IPs to have any beneficial impact (see, e.g., Lall 2004).

Opponents of IP see these difficulties as leading to a significant government failure that would overshadow any market failure it is supposed to correct. Proponents of IP consider these concerns, to some extent, as valid, but not insurmountable.

Information constraints

Opponents of IP argue that the existence of market failure is not enough to justify government intervention. Such intervention must be shown to result in higher welfare (the so-called Mills test) as well as be cost-effective (the so-called Bastable test) (Budzinski and Schmidt 2006; Harrison and Rodriguez-Clare 2009). This, however, is difficult to ascertain as the informational requirement is huge to identify the relevant sectors and to do cost-benefit calculations. Pack and Saggi (2006: 15-6) list at least

fifteen areas wherein governments, in their view, need information and expertise in order to appropriately conduct IP.

According to Lall (2004), arguments about the government's lack of information or incentives (see below) for IP should not be generalized, but be judged according to context. Governments have shown that they can overcome informational constraints (consider, e.g., the case of EU with regard to Airbus; Brazil, with respect to Embraer; Korea in the case of steel) and can avoid the rent-seeking or corruption that derails policies (e.g., in the case of Mauritius' EPZs). Deraniyagala (2001) also does not see information constraints as insurmountable, referring to the usefulness of public-private sector collaboration as a way to increase the scope of information available to governments. This theme is also taken up by Rodrik (2004).

Lall (2004) argues that the ability of countries to overcome the informational and incentive obstacles to IP depends on five measures of government: effectiveness (skills), monitoring ability, flexibility, transparency in decisionmaking, and minimization of corruption: all are included in the World Governance Indicators (WGIs) compiled by the World Bank. Since these tend to be correlated with a country's level of development (i.e., institutions are endogenous), this generally means that the countries most in need of structural change and the IPs to foster it, are the least likely to able to do so.

According to Lall (2004), even if the information requirements for IP are steep (fifteen 'areas' and five 'characteristics'), and the ability of governments in the poorest ILCs questionable, this does not preclude these countries from starting to adopt IPs. The minimum requirement is that they have a government committed to progressive industrial policymaking. Chang (2009) also believes this to be important, and considers the long-term and national perspective of government leaders as overriding the short-term concerns and informational requirements of private sector agents in evaluating possible projects to support. Here, national leaders and their ability to find the right vision and to galvanize the pubic and private sectors to support this vision remain central.

Indeed, over the past decade or so, many poor countries have made important strides towards improving the organizational set-up and framework for industrial policy and in taking the question of leadership more seriously. This suggests that they are increasingly recognizing IP as a 'process'. Hence, a multitude of organizational institutes and agencies are geared towards the IP process, such as those for technology transfer (e.g., science councils), new business formation (e.g., incubators, small business advisory councils), exporting (marketing councils, information gathering, quality assurance schemes), FDI (promotion agencies), and the establishment of cluster ministries (to coordinate the various IP elements) as well as the decentralization of industrial policy[22] and planning to subnational governments (where subsidies are less constrained by WTO rules than at the national level).

The approach process to IP allows for considerable experimentation[23] in identifying which sectors are to be supported (see Pack and Saggi 2006; Klimenko 2004; Aghion

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22 In China and India, for instance, decisionmaking on industrial policy is significantly decentralized. Most states and provinces have their own industrial policies, and 'local' protection is strong.

23 See the following text for the implications of taking entrepreneurship into consideration.

2009; Hausmann and Rodrik 2003). Such an approach, however, requires that support to inefficient firms be discontinued as soon as this becomes evident, and that they be allowed to exit the market (see Aghion 2009; Campbell 2009; Ulltveit-Moe 2008).

Rent-seeking and corruption

Selective industrial policies, such as those related to import protection or subsidies, for instance, deliberately seek to create rents in a particular activity to encourage it. This comes with the downside that economic agents may either attempt to maintain[24] those rents indefinitely, to influence the government to create similar rents in other, unjustified industries, or to dissipate the rents inappropriately through corrupt behaviour. Thus IP may lead to the persistence of protective measures, infant industries failing to grow, protection being awarded to low productivity, low potential or even 'sunset' industries, as well as widespread patronage and corruption. Krueger (1974) shows that rent-seeking in the case of import quotas entails a significant welfare cost.

According to Cimoli at al. (2006: 17), the rent-seeking and innovation inefficiencies due to import protection measures should be acknowledged, but not overemphasized, as they can be avoided. They mention measures, such as linking protection to productivity gains (e.g., linking protection to export performance, as in the case of South Korea) and increasing domestic competition by facilitating firm entry and exit.

Also, it has to be pointed out that rent-seeking and corruption are inherent dangers not only with import protection measures and state-owned enterprises, but also in liberalized economies, and in the privatization process itself: for instance, rent-seeking activities have been evident in the USA (e.g., Johnson 2009a). Accordingly, the argument that trade liberalization is necessary and sufficient to reduce rent-seeking and corruption does not hold. Moreover, Bayliss and Cramer (2001: 61) argue that in ILCs with relatively weak capacity, the *absence* of an import protection strategy and state-ownership of key sectors (incoherent protection) can be dangerous, because:

> naïve privatization analysis and programme design may well encourage incoherent protection. Without a policy framework or rationale for selecting the beneficiaries of protection … it is more likely that weak developing-country states will cave in haphazardly to pressure.

Avoiding rent-seeking, therefore, depends clearly on the political context, as Robinson (2009) and Holder (2009) also emphasize. More specifically, using a recent theoretical model that allows for both market and government failure, Hodler (2009) illustrates that a politically motivated government can increase welfare through IP, but *only* if it has a small budget (i.e., the benefit from public support is low for entrepreneurs or firms with unprofitable projects). His model illustrates that government failure can be overcome, and confirms that in many East Asian NIEs, government is able to exit sooner rather than later from the support of unproductive projects. The importance of political will in exiting from unproductive projects is emphasized by Pack (2000: 64) as well as Ulltveit-Moe (2008), who terms this as the 'live and let die principle'.

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24 As Budzinski and Schmidt point out (2006: 5-6), 'instead of focusing on creating better products and processes, the creative forces of an economy are induced to concentrate on gaining and maintaining rents from state aid'.

In conclusion, the two major practical objections to IP—informational challenges and the possibility of rent-seeking or corruption—are not unique to industrial policy. In this light, Rodrik (2007) is surprised at the resistance to IP, noting that these risks also plague many other spheres (education, health and even macroeconomic policies). Nevertheless, they are explicitly discussed, adopted and implemented today without the controversy—which is 'out of all proportion' (Weiss 2009: 1)—that marks the industrial policy debate.

Empirical evidence

Given the theoretical case for IP, the question is whether there is empirical evidence to suggest that IP has contributed significantly to the development of infant industries, to exports, to the attraction of exports, to government coordination and firm ownership, and to the deliberate creation of market failures.

The empirical evidence is mixed, at best, and complicated by estimation problems, not the least of which are the measurement errors and omitted variables that make it hard 'to see how statistical evidence could ever yield a convincing verdict' (Rodrik 2007: 4). Empirical evaluation is further complicated by the absence of counterfactuals (Pack and Saggi 2006), without which it may be difficult to 'confirm' that East Asia's successful industrialization was the result of the IPs followed. Indeed, it has been argued that some countries (e.g., Japan) might have done even better without their selective IPs (Pack 2000: 51). Similarly, it is difficult to 'prove' that sub-Saharan Africa and some Latin American countries would have performed better if these countries had not adopted particular IPs. The case studies offered as illustration of either the success or failure of IPs suffer from selection bias and lack of representativeness (Rodrik 2004; 2007).

With regard to econometric studies, Harrison and Rodriguez-Clare (2009) review the recent evidence on the impact of tariff protection measures and incentives for attracting FDI. They conclude that literature offers no evidence of a significant association between tariff levels and economic growth and that 'the empirical literature on FDI does not yield sufficient evidence in favour of industrial policy to justify subsidies to foreign investment' (ibid.: 2). On the contrary, they cite numerous studies which show the converse, namely that a reduction in tariff protection and quotas leads to increases in productivity.

A difficulty with the conclusion that the weak empirical relationship between protective measures and economic growth implies that infant industry protection has been unsuccessful, is that protection frequently is not used as IP. Indeed, tariffs and quotas are often not adopted for strategic purposes to foster a latent comparative advantage, but rather to generate either government income or to protect special interests (Lall 2004; Robinson 2009; Harrison and Rodriguez-Clare 2009). As Deraniyagala (2001) and Noland and Pack (2003) report, the beneficiaries of tariff protection often turn out to be the 'sunset' industries, instead of the intended sectors with latent comparative advantage. A recent example is that of the South African government raising tariffs and quotas on Chinese textile imports to protect the ailing industry (see Naudé and Rossouw 2008). Thus, if one concludes from this that the type of sector and the motivation for protection matter, then it is perhaps interesting to consider the following: in a study of tariff protection over the period 1875 to 1913, Lehmann and O'Rourke (2008) observe the protection of manufacturing sectors to be associated with higher growth, and Nunn

and Trefler (2007) note that growth was higher in the economies where skill-intensive sectors were protected.

In a similar vein, Pack and Saggi (2006) review empirical evidence on the success of more recent IPs aimed at fostering clusters through export processing zones (EPZs), for example. There are more than 1,000 EPZ in operation worldwide (Rodrik 2004). These researchers conclude that the empirical evidence is still insufficient, making it difficult to determine why some EPZs have succeeded while most failed. Devarajan and Uy (2009) discover only mixed results for EPZs, citing obstacles such as political interference, poor zone development practices, inefficient management and poor site location.

Similarly, in a recent survey of the impact of privatization, Bourguignon and Sepulveda (2009) encounter a number of methodological difficulties in assessing the success of privatization. They note that even though there may be a suggestion of improved efficiency and productivity, the waves of privatization[25] following the adoption of the Washington consensus type policies since the late 1980s have produced an increase in inequality and resistance against further privatization in the developing countries.

While the evidence of the impact of IPs on infant industries, FDI, and clustering is mixed, the evidence on export promotion offers a slightly different result. As has already been mentioned, studies do tend to find a positive role for government intervention. According to Lederman and Payton (2006), each additional dollar targeted to export promotion results in a US$300 increase in exports for the median EPA. Rose (2007: 23) advises that the number of foreign missions in a country is positively correlated with its exports to those destinations, and each additional consulate induces the exports to that country to increase 6-10 per cent.

Finally, in interpreting the empirical evidence on IP, one should not discount the role of luck (Robinson 2009). In this regard, Pack and Saggi (2006) discuss the case of India, where industrialization benefited from the Y2K problem and the changeover to the Euro. Subramanian (2008) discusses the case of Mauritius, which was fortunate to receive preferential treatment in terms of the MFA. Moskovitch and Kim (2008) document the experience of South Korea, where the 1997 Asian crisis gave an impetus to the growth of smaller entrepreneurial firms. And more recently Gebreyeesus and Iizuka (2009) note how Ethiopia benefited from the collapse of flower exports in Zimbabwe.

5 Conclusion: Is a consensus on IP within reach?

> As the process of development takes place, countries … must undergo structural transformation. Depending on one's view of the world, this may be easy or hard (Hausmann and Rodrik 2006: 5).

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25 Bourguignon and Sepulveda (2009: 2) describe the various waves of privatization in developing countries since 1988 documenting that the proceeds raised was around US$530 billion in constant 2000 dollars.

More than sixty years ago, Paul Rosenstein-Rodan (1943), referring Eastern Europe, advocated government intervention for industrialization in order to overcome poverty traps and global inequality. This call remains relevant today, especially for the masses of people living in the industrially lagging countries. Moreover, he argued for the type of industrialization that would create jobs, that would be global so as to be aligned with the international division of labour, and one that would not take place in autarky. Such a structural change is still broadly relevant for the challenges and trends facing today's industrially lagging countries (ILCs).

Today, these countries may benefit from the debate on IP leaning in their favour. It is argued here that the 'old' debate about the merits of IP has largely made way for a 'new' debate, and a fragile consensus is emerging that the issue now is about the 'how' of IP rather than the 'why' of IP, reflected in the fact that almost all countries presently engage in IP, and consider it necessary.

However, in attempts to foster industrial development while taking care about the 'how' of IP, countries need to be aware of the recent trends and challenges in the world economy and to understand how these shape the content of IP. This is being overlooked in the IP dialogue. For instance, as Naudé (2010a) argues in a follow-up paper, five significant areas influencing the IP content include: (i) the challenge of the increasing globalization of the world economy, especially the rise of global production sharing, (ii) the challenge posed by the recent crises in food, fuel and financial markets, (iii) the challenge of climate change, (iv) the rise of China and India, and (v) the rise of the 'entrepreneurial economy'. As the Appendix Table, summarizing recent contributions to the IP literature shows, so far little academic research has taken these into consideration.

Given that a consensus on an IP outline may be within reach, the remark by Devarajan and Uy (2009) (with reference to SSA) that 'no clear model is emerging on transformative industrial policies' does not hold entirely. At present, there is much more transparency than earlier, and as the debate and future research move to provide even greater understanding on the new issues of *application* and *content*, a clearer model will emerge.

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Appendix Table:
Summary of concerns of recent key literature on industrial policy

Authors	Focus	Concerned with: Globalization inequality	Crises in food, fuel and finance	Climate change	Rise of Asian drivers	Entrepreneurial economy
Aghion (2009)	The infant industry argument The case for IP	No	No	No	No	No
Altenburg (2009)	Definitions The case for IP Globalization, climate change, aid, the LDCs	Yes	No	Yes	No	No
Cimoli et al. (2006)	Institutions and IP Domain of policy intervention Globalized world – implications	Yes	No	No	No	No
Chang (2009)	Definitions The case for IP Lessons from experience; Globalization, policy space	Yes	No	No	No	No
Lin & Chang (2009)	The case for IP How much to 'defy' comparative advantage?	No	No	No	No	No
Memis & Montes (2008)	The case for IP The role of the state Globalization and trade	Yes	No	No	No	No
Pack & Saggi (2006)	The case for IP; The international dimension Government requirements	Yes	No	No	No	No
Perez & Primi (2009)	Definitions The case for IP Historical experiences, examples IP in Latin America	Yes	No	No	No	No
Robinson (2009)	Definition of IP Assessment of IP Institutions and IP	No	No	No	No	No
Rodrik (2007)	The case for IP Empirical measurement difficulties Key design attributes of IP	No	No	No	No	Yes
Ul-Haque (2007)	The case for IP Global context	Yes	No	No	No	No
Ulltveit-Moe (2008)	Definitions The case for IP European perspective Future challenges	Yes	No	No	No	No
Weiss (2009)	Definitions The case for IP Evaluation of success Future challenges	Yes	No	Yes	Yes	No

Source: Author's compilation.