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2009

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JEL L52

Keywords: European Industrial Policy, Market Failure, Resource Creation, Economic Sustainability

Abstract

This paper discusses alternative political economic perspectives on competition (anti-trust) and industrial policies (IP), in theory and in practice, while critically assessing recent European IP in this context. It develops a new framework for IP, which emphasises the sustainability of value and wealth creation at the firm, meso and supranational levels, and explores its implications for IP in general and European IP in particular. It views current EU policies as a step in the right direction, but argues that they need to pay more attention to the issue of economic sustainability, the link between corporate, public and supranational governance, and the impact that different power structures and hierarchies of agencies have on industrial policies for sustainable value and wealth creation. The limitations of self-monitoring and diversity suggest the need for an accountable supranational competition and regulatory policy organisation with a strong focus on economic sustainability.

I. Introduction

The aim of this paper is to critically assess existing perspectives on industrial and competition policies by paying particular attention to the policies of the European Union (EU). We explore the idea that non-neoclassical economics views have now achieved an almost mainstream status within EU policy circles. We claim that this is a step in the right direction, but also that more progress can be made. This requires strengthening extant knowledge on the issue of industrial policy (IP). The next section of the paper discusses alternative perspectives on competition policy and IP. The third section discusses international practice, especially European industrial policies, in the context of

new trends. The fourth section sketches a novel conceptual framework and explores its implications for current European policies. The last section offers a summary and conclusions.

II. Industrial and Competition Policy: Alternative Perspectives

The term 'industrial policy' (IP) refers to a set of measures taken by a government that aim to influence a country's industrial performance towards a desired objective and the measures taken to implement this objective.[1] Competition (or anti-trust in the USA) policies (CPs) refer to the stance governments adopt towards competition and cooperation between firms in industries, and the measures they take to implement their objectives. CPs usually attempt to influence the degree of competition or monopoly in industries, such as, for example, the car industry.

Most government measures and policies affect industry one way or the other. Therefore, boundaries between industrial/competition/anti-trust policy and other policies, such as technology policy, regional policy, structural policy, competitiveness policy, and even macroeconomic policy, are not always clear. The closest we can get to a demarcation line is arguably by referring to a government's own perception of what it aims IP and CP to be, alongside the underlying body of theoretical knowledge, purposely informing such perception. The government's objective is usually assumed to be the improvement of the welfare of its citizens, which is achieved when resources are allocated efficiently, and wealth creation and appropriation by the nation as a whole, take place at a pace

preferably faster than in other countries (improved international competitiveness).[2] Industry is believed to be an important contributor to the process of wealth creation for numerous reasons including, for example, the high degree of tradability of its products, its positive link with technology, innovation and productivity growth, and even the close links between manufacturing and services (Pitelis and Antonakis, 2003; Amsden, 2008). It follows that a government wishing to improve the welfare of its citizens will be well advised to design measures that foster the efficient allocation of resources and the creation and capture of wealth, i.e. to devise policies that lead to a strong, productive, competitive and wealthy economy. There is agreement among economists that the right type and degree of competition between firms and industries can be a potent means of facilitating this desired objective. However, views differ as to what should be the role, the right type and degree, and even the nature (including the very definition) of competition. It is not possible to discuss all these issues in detail in this article, but a brief overview of alternative perspectives may facilitate a better understanding of some important themes.

The Neoclassical Industrial Organisation (IO) Market Failure-based Perspective

The dominant perspective on industrial and competition (anti-trust) policy among academic circles is still the mainstream neoclassical one. It is based on the theory of competition, monopoly and industry organisation (IO). In the context of this approach, competition is seen as a type of industry structure. This can be a perfect or an imperfect structure. Perfect competition is characterised by the existence of numerous firms that produce very similar (homogenous) products, full and symmetrically distributed knowledge about firm and industry conditions (demand and cost conditions, in

particular), and free mobility of resources (for example no barriers to entry and exit of firms in the industry). Under such conditions, firms are price-takers; they cannot influence the prices, which are determined by the interplay of supply and demand in the industry. In addition, such prices only cover average costs, and firms only make a normal profit.

The opposite of perfect competition is monopoly. Here we have only one firm in the industry, with blockaded entry. By restricting output, a monopolist that maximises profits will charge a price that is higher than the price of a perfectly competitive firm. As a result, consumers will end up with lower quantities of goods, for which they will pay higher prices. This is bad for consumers, and leads to misallocation of resources because output is restricted compared to that of perfect competition.

According to the neoclassical view, the main concern of an economy should be to allocate its scarce resources (capital, land, labour and knowledge) efficiently and in so doing to maximise the welfare of its consumers. In this context, monopolistic restrictions lead to market failure due to the 'wrong' type of market structure (so-called structural market failure). When such failures exist, the neoclassical approach posits that the government can step in to correct them. However, there are problems with this approach. First, in reality, the two polar opposites – monopoly and perfect competition – are recognised to be unrealistic, with the most prevalent form of industry structure being some sort of 'imperfect competition', such as 'monopolistic competition', 'oligopolistic competition' and/or big business competition (Baumol, 1991). An industry structure is characterised as 'oligopolistic' when there is interdependence between a small number of usually rather large firms. When one firm acts, the other is affected and needs to react.

This raises the question of how imperfect, or big business competition, is linked to efficient resource allocation. A second problem is that the comparison between monopoly and perfect competition assumes that they face the same cost and demand conditions, and that they have the same information/knowledge, technology, resources and competences. However, if this is not the case, one has to take into account such differences.[3]

To gauge the degree of monopoly in real life industries, economists usually use measures of concentration. If an industry is highly concentrated, it is presumed that there is prima facie evidence for reduced competition, the possibility for collusion over prices, strategic barriers to entry and high prices. However, the link between concentration and market power in the form of higher profits is questionable. It may, for example, be the case that more efficient firms grow larger (which in turn increases concentration) while also being more profitable (Demsetz, 1973). The crucial issue in this context is collusion over prices and barriers to entry. Collusion over prices is normally illegal in most countries, but notoriously difficult to identify, especially when it is not overt (the case of 'tacit' collusion). Studies on barriers to entry, on the other hand, have confirmed their existence and importance (Scherer & Ross, 1990). Even barriers to entry, however, could be seen in some cases as an inducement to innovation (Pitelis, 2004).

In order to obtain an indication of the importance of monopoly welfare losses on the economy-wide level, one has to try and measure such losses. There are various ways to do this, and a large empirical literature has developed as a consequence. Results vary greatly, but it is widely believed that some static losses do exist, and therefore that monopoly is a potentially serious problem that needs to be dealt with by the government. In principle, the government could step in to ensure perfectly competitive markets by, for

example, discouraging mergers and acquisitions, encouraging mobility and even breaking up large firms. If this took place simultaneously in all industries, consumer welfare would be maximised. However, if this is not the case, perfectly competitive structures in one industry but not in others need not necessarily improve overall welfare. This is the problem of 'second best'. In a second best world, what can the scope of competition/anti-trust policy be? Many economists believe that a degree of 'workable competition' is still desirable (see Hunt, 2000 for an account). Workable competition could take the form of guarding against the acquisition and abuse of monopoly power and the support of small and medium-sized enterprises (SMEs). In practice, this can be done by, for example, barring a firm from achieving a certain market share and/or pursuing certain restrictive practices, such as price collusion (Scherer and Ross, 1990), and by devising measures that foster a level playing field and support new firm creation.

The focus on static 'welfare losses' fails to account for any differences in efficiency between perfectly competitive firms and oligopolistic firms with a degree of monopoly power. There are various dimensions of this issue. One of these dimensions relates to differences in costs. Oliver Williamson, for example, has argued that monopolies may have lower cost curves, which implies an efficiency gain vis-à-vis the perfectly competitive industry. This gain should be traded off against any static losses Williamson's trade-off (Scherer and Ross, 1990). In addition to the potential efficiency gains, oligopolistic market structures may also be more conducive to innovation (Baumol, 1991). Such innovation can result in dynamic productivity benefits, a factor that must also be taken into account.

A way for firms to increase their size and consequently, *ceteris paribus*, their industry concentration, is to undertake activities that could potentially take place in the market. For example, firms may take over their suppliers or distributors rather than dealing with them at arm's length. There are numerous reasons why firms could 'integrate', including the pursuit of market power through the reduction in the forces of competition and so on (Porter, 1980). However, one possibility is that firms integrate because market exchange is costly; finding and dealing with other firms can lead to high exchange or transaction costs. Coase (1937), Williamson (1975) and many other economists believe that reducing market transaction costs is an important reason for the existence and boundaries (and therefore, the size) of firms. If increasing firm size is the result of transaction cost reductions, such efficiency gains should be taken into account by regulatory bodies. A vertical acquisition, for example, could be motivated by efficiency, not by market power motives. Similarly, cooperation may not involve collusion over prices but be motivated by knowledge-acquisition and enhance innovation and dynamic efficiency (Jorde and Teece, 1992). Overall, such considerations suggest a more lenient attitude towards large oligopolistic firms.

In reality, it is unlikely that transaction costs and the pursuit of efficiency will be the exclusive determinant of firm size and/or that markets will be perfectly competitive (or contestable). Moreover, this approach takes technology and innovation as constant, or simply linked to the type of market structure (Scherer and Ross, 1990), which is rather limiting, as we shall see below. Nevertheless, these views have influenced industrial and competition policy makers, and cannot therefore be ignored.

Evolutionary/Resource, Knowledge and Systems-Based Perspectives

The dominance of the neoclassical view on competition, monopoly and industrial and competition (anti-trust) policy is currently under threat. This is due to the emergence and recent popularity of an alternative perspective, which can broadly be defined as the evolutionary/resource, knowledge and systems-based perspective. This perspective encompasses a diverse group of contributions, all of which share the view that competition should not be seen as a type of market structure, and that important is not just the efficient allocation of scarce resources, but also the creation of value and wealth, and that the two are not necessarily the same (Groenewegen et al., 1994). There is a widespread belief that firms are very important contributors to value/wealth creation, and also that each firm is an individual entity, differing from other firms primarily in terms of its distinct resources, capabilities and knowledge.

The lineage of this perspective can be claimed to include founding fathers, such as Adam Smith (1776) and Karl Marx (1959), and more recently influential economists such as Joseph Schumpeter (1942), Edith Penrose (1959), George Richardson (1972) and Nelson and Winter (1982). In brief, classical economists such as Smith and Marx focused on wealth creation not just on (or through) resource allocation. They viewed competition as a process, regulating prices and profit rates. They did not see it as a type of market structure. Smith (1776) described the amazing productivity gains through specialisation, the division of labour, the generation of skills and inventions within factories, in his famous analysis of the pin factory. Marx (1959) also suggested that there is a dialectical relationship between monopoly and competition (whereby competition leads to monopoly and monopoly can only maintain itself through the competitive struggle). He also explored their impact on technological change, the rate of profit and the ‘laws of

motion' of capitalism at large. In addition, Marx focused on competition within the factory, and in society at large, between employers and employees, and between classes. This type of competition can be more accurately described as 'conflict'. Building critically on Marx, Joseph Schumpeter (1942) described competition between firms as a process of creative destruction through innovations. He saw monopoly as a necessary and just, yet only temporary, reward for innovations. He attributed firm differential performance on differential innovativeness and saw concentration to be the result of such innovativeness.

Edith Penrose's classic 1959 book on *The Theory of the Growth of the Firm* can arguably serve as the glue that can bind such contributions together. In her book, firms were seen as bundles of resources, the interaction between which generates knowledge, which, in turn, releases excess resources. 'Excess resources' are an incentive to management for growth and innovation, as they can be put to use at almost zero marginal cost. Differential innovations and growth lead to concentration, which, however, can also be maintained through monopolistic practices (Pitelis, 2004). The world is seen as one of big business competition, where competition is god and the devil at the same time. Competition drives innovativeness, yet it is through its restriction that monopoly profit can be maintained.

Building on Penrose, Richardson (1972) observed that firms not only compete but also cooperate extensively. Moreover, such cooperation is not just through price collusion as the neoclassical theory assumes. It lies between market and hierarchy, and occurs when firms' activities are complementary but dissimilar (i.e. they require different capabilities). Nelson and Winter (1982) subsequently developed ideas currently of import

to the resource-based view (RBV). Notable are those of firm 'routines', which simultaneously encapsulate the firm's unique package of knowledge, skills and competences, and allow firms to operate in an evolving environment with a degree of path dependent institutionalisation.

Based on contributions by Penrose (1959) and/or Demsetz (1973), the resource-based view (RBV) emphasized the nature and characteristics of resources and resource creation and its link to firm-level sustainable advantage. Contributions such as Wernerfelt (1984), Barney (1991), Peteraf (1993), and Mahoney and Pandian (1992) emphasized the importance of acquisition and leveraging of resources that are valuable, rare, inimitable and non-substitutable (VRIN). Teece (1982) and the knowledge-based view (Grant, 1996; Spender 1996) focused most on the value creation attributes of knowledge and resources. The dynamic capabilities view of Teece et al. (1997) and Teece (2007) emphasized the role of capabilities in the identification, upgrading and leveraging of resources. More recently Pitelis and Teece (2009) focused on the role of capabilities in market creation and co-creation.

The focus of the evolutionary and resource-based view on evolution, knowledge and innovation, as well as its 'systemic' (as opposed to market-failure) perspective, has arguably facilitated the emergence of a major change in industrial and competition (anti-trust), as well as wider competitiveness policies. This, in turn, has led to more emphasis being placed on the knowledge and innovation-promoting potential of different institutional configurations. The 'national', regional and sectoral systems of innovation approach, the literature on clusters of firms, the work of Michael Porter (1990) on

national competitiveness, and the "varieties of capitalism" perspective, all draw upon and relate to this evolutionary/resource/system-based view (Pitelis, 2009a).[4]

There are various other implications of the evolutionary/resource and systems-based perspective for industrial and competition (anti-trust) policies. First, its focus on value and wealth creation suggests a broader welfare criterion than consumer surplus only (Mahoney et al, 2009). Second, superior capabilities provide yet another efficiency-based reason for concentration. Third, competition as a dynamic process of creative destruction through innovation implies the need to account for the determinants to innovate when considering the effects of 'monopoly', but also more widely. Fourth, competition with cooperation (or 'co-opetition'), as in Richardson, implies the need to account for the potential productivity benefits of co-opetition when devising competition policies (Jorde and Teece, 1992). Another dimension on competition relates to its strength, and the role of proximity and location. This links to the work of Richardson, but has subsequently been developed by Porter (1990), Krugman (1991), Audretsch (1998b), Dunning (1998), and others (see Jovanovic 2009 for an extensive account). For instance, Porter claims that local competition is more potent than distant (for example, foreign) competition. Last but not least, the degree of competition is also important. Too much competition can be as bad as too little, as it can lead to a failure to exploit unit cost economies and to a dissipation of resources – an example begin tea production in China (*The Financial Times*, 2009a). These may have important implications in devising anti-trust policies, as we will see below.

III. International Practice and European IP in the Context of New Trends

Despite its evident limitations, the neoclassical perspective has dominated industrial and competition policy thinking in the Western world for many decades. Anti-trust legislation in the US and the original Articles 85 and 86 of the Treaty of Rome in Europe both seem to be directly informed and influenced by it, in theory at least.

In reality, of course, practice has varied from theory, and also between countries and over time. As argued elsewhere (Pitelis, 1994), European policy, for example, has been described as ad-hoc, discontinuous and even inconsistent. It has been seen as ad-hoc because the theoretical basis of various policies was not clear. A notable example is the 'national champions' or 'picking winners' policy, which was pursued by various European countries in the 1960s and 1970s. This policy involved identifying potentially successful firms and industries and using a number of measures like subsidies and tax breaks to promote them. It also involved a lenient and even encouraging attitude towards mergers and, in some cases (often in pursuit of considerations of fairness and distribution), nationalisation of utilities but also other industries perceived to be 'strategic'. For example, the two main characteristics of post-World War II French experience were a close relationship between government and business and a willingness to nationalize certain enterprises. This was epitomized by the government's policy of creating national champions in technology and capital intensive industries that were dominated by global oligopolies (Friendson, 1997). Similarly, in Italy and Spain, where the entrepreneurs had to compete with already well-established international industrial core, government assistance was also very prevalent (Chandler and Hikino, 1997). In Germany too, large enterprises received powerful and consistent protection and tutelage

from the big German banks in what came to be known as "Rhenish Capitalism" (Wengenroth, 1997).

The underlying hope behind this approach was that such firms could compete successfully with foreign rivals, thus raising export surpluses and country competitiveness. Evidently, however, this tended to exacerbate structural market failures, and was also inconsistent with the theoretical pursuit of 'competition'. The policy was also pursued at a pan-European level, in the search for pan-European companies, which could out-compete large American multinationals. In some cases, such policies blunted incentives for protected firms to compete, and gave rise to 'problematic enterprises', or 'lame ducks'.[5] After trying to rescue them for a number of years, European governments, led by Mrs Thatcher's Britain, eventually resorted to deregulation and privatisation, as well as a shift of focus to small firms and entrepreneurship. This shift of focus also resulted in a discontinuity of policies, from emphasis on large firms and the government, to the centrality of small firms and the market (Pitelis, 1994).

The approach of Japan, and the so-called 'tigers' of the Far East, on the other hand, was different. In Japan, policy was led by the then Ministry of International Trade and Industry (MITI) (now Ministry of Economy, Trade and Industry – METI) and was not informed by neoclassical economics (Chandler et al., 1997; Johnson, 1982). Rather, it involved a strongly interventionist approach by the government, intended to create advantages in certain sectors. Such sectors were chosen on the basis of being high value-added, high income elasticity of demand and knowledge-intensive. In such sectors, MITI provided financial and other support and guidance. It regulated the degree of competition (neither too little, nor too fierce) by aiming at an 'optimum' number of firms in it,

protected these sectors from foreign competition at the same time, and effected 'technology transfer' through the subsidization of licensing of technology from foreign firms. MITI also paid attention to the benefits of cooperation and the promotion of small and medium-sized enterprises (SMEs) (Best, 1990). Overall, this approach to competition could be described as domestically focused managed competition balanced with cooperation (co-opetition). The approach of the East Asian 'tigers' was similar, although some of them, especially Singapore, affected 'technology transfer' not through licensing as practised by Japan, but through an inward investment policy (Pitelis, 2009a).

Furthermore, it is important to emphasize that most East Asian countries pursued sector-specific industrial policies (World Bank, 1993). While their approaches differed, the East Asian states focused their intervention on industries where entry barriers were high, therefore, socializing the risk involved in the development of infant industries**.** Moreover, this was important because these countries did not have sufficient knowledge-based assets to compete with world prices (Amsden, 2001). In these countries, not only did government play a significant role during industrialization, but the form of state intervention was unique. In East Asia, both industrial targeting and firm targeting was conditional on performance standards. While the previous industrializers had helped their industries mostly by protecting the domestic market, the East Asian governments aimed to foster international competitiveness and export through the use of monitorable performance standards (Chandler et al., 1997; Chang, 2000; Rodrik 2009).

The performance of the Japanese economy and that of the tigers in general has been very impressive until recently. It is not surprising that some commentators have attributed this success in part to their approach to competition and industrial policy (as

well as to other characteristics of the Far Eastern economies, such as education, an equitable distribution of incomes, a high savings ratio and so on) - although views on this still vary (Pitelis, 2001; Pitelis, 2004; Serra and Stiglitz, 2008; World Bank, 1993). As opponents of industrial policy observe, the problem with the success cases is that the counterfactuals are unavailable (Pack and Saggi, 2006). That is, we do not know how these economies would have performed if they had not pursued the kind of industrial policy they did pursue. Some empirical analyses and econometric findings show that industrial policy in East Asia failed to impact the growth of total factor productivity (Westphal, 2005). Indeed, the World Bank argues that what defined the success of East Asian growth was the ability of East Asian states "to get the fundamentals right." According to the World Bank, market-friendly policies that ensured low inflation and competitive exchange rates, enhanced human capital through education, created effective financial systems and limited price distortions were at the heart of East Asian experience (World Bank, 1993). According to the World Bank, moreover, industrial policy attempts to achieve higher productivity by changing industrial structure were not successful. These views regard the role of industrial policy as minimal and also point out to countries such as Indonesia and Malaysia, which failed to drive heavy state-directed industrialization and technological leapfrogging despite similar approaches to industrial policy.

To attribute the success of the Far East just to its approach to competition and its interventionist IP, especially given similar but less successful interventionist policies by Western governments in the past, implies either misconceived policies by the latter, or a higher degree of in-competence. This may well be the case (Amsden, 2001), but there is also a second potential argument. In contrast to the West, the Japanese and other East

Asian governments were not influenced by the neoclassical perspective and favoured instead an approach that focused on resource creation (not just through resource allocation) through big business competition for innovations, growth, productivity and competitiveness. This approach, which seems to combine Schumpeterian and Penrosean ideas with its accompanied focus on production and organisation (Best, 1990) may well be a *differentia specifica* of the Far Eastern approach. It has been associated with major innovations such as total quality, 'just-in-time', lifetime employment, and the coexistence of competition with cooperation (co-opetition).

Developments in economics and management in recent years such as the new international trade theory, the new endogenous growth theory, the new location economics, the resource and dynamic capabilities-based perspective, and the national, regional and/or sectoral systems of innovation approach (Wignaraja, 2003; Pitelis, 2009a), arguably offer some support to the Japanese perspective and policies (Jovanovic, 2009). In part due to these developments, recent approaches to competition and industrial policies in the Western world have tended to move away from the standard neoclassical perspective, and towards an approach and policies aimed at improving competitiveness at the firm and macro levels. There are various versions of this new approach. The 'new industrial policy' approach, for example, retains its neoclassical flavour but emphasises input, linkages and technology policies as incentive-compatible means of improving firm and industry competitiveness (Audretsch, 1998a). More general competitiveness models, such as Michael Porter's, focus on the role of firm clusters and other determinants of competitiveness (Aiginger, 2006b; Porter, 1990). Cluster policy is seen as a new IP (Porter, 1998) based on co-opetition. The focus by the EU on education, (soft)

infrastructure, technology and innovation, SMEs and clusters in the late 1990s, represented a move in this direction.

The importance of education policy is particularly noteworthy in this context. In a knowledge-based global economy, education and training have become a crucial factor for ensuring sustainable competitive advantage. The economic and social returns to investment in human capital are well known (see for example OECD, 2009). Indeed, this is why, recognizing the crucial importance of spending in education and training, the EU has created initiatives such as Education and Training 2010 work programme which focuses, among other things, on raising the skill levels of its workforce, enhancing lifelong learning strategies and promoting excellence in higher education system (Council of the European Union, 2008).

An interesting aspect of EU IP in the 2000s is its apparent shift to a non-neoclassical, arguably evolutionary/resource/system-based approach. Several authors have discussed in detail the policies that represent this shift to a new EU industrial policy (Pelkmans, 2006; Mosconi, 2005; Smith, 2003). This shift is remarkable, given that from the mid-1980s the European Community sought to address the issue of competitiveness with the logic of internal market competition, the so-called "competitiveness through competition" approach. This in turn had led to the development of an institutional framework, a policy regime and a discourse that favoured liberalization (Smith, 2003).

Beginning in 2002, however, there has been a clear shift in this approach. First of all, and importantly, the discourse has changed and with it the rhetoric. This is evidenced by the fact that the very term 'industrial policy' has returned, following years of 'disrepute' and a focus on 'horizontal measures'. 'Horizontal measures' related to

education, innovation and entrepreneurship are critical for economy-wide value creation (Pitelis, 2009a). The fundamental question was, and remains, whether and what type of a more focused policy toward industry can help foster this objective (see below). Several European Commission documents, released since 2002, are noteworthy in this regard. All of them use the term 'industrial policy', which in itself is significant.

Indeed, recent EU policy reads very much like the evolutionary, resource, system-based approach (Pitelis, 1998; 2001). We focus on four recent EU documents or statements here (EC, 2002, 2004, 2005, 2007). The major themes of the 2002 document are the following: industry matters; enlargement is an opportunity; sustainability matters; horizontal policy measures need to be applied in response to specific sectoral needs; and that policies need to contribute to competitiveness. Following this, the objective of the 2004 document is for 'industrial policy' to accompany the process of industrial change ('deindustrialisation'). Proposed 'actions' include a 'regulation framework,' 'synergies of policies' and a 'sectoral dimension'.

It is important to re-emphasize that, with the shift in approach, the 'sectoral' element has also resurfaced. Following the re-launch of the Lisbon Strategy, the European Commission has set out an integrated approach to industrial policy. The guidelines of this policy can be found in various documents, most comprehensively in the 2005 EC document. This policy framework not only reinforces the major themes of the 2002 and 2004 documents, but also focuses on the potential role of industrial policy in individual sectors and emphasizes the importance of combining the horizontal and sectoral dimensions of European Industrial Policy. To this end, it includes both cross-sector initiatives (on competitiveness, energy and the environment, intellectual property

rights, regulation, research and innovation, market access, skills and structural change) and proposes seven new initiatives for individual sectors (pharmaceuticals, biotechnology, mechanical engineering, space programmes, defense, ICT, and chemicals) in addition to the previously existing ones (automotive, shipbuilding, aerospace, textile and clothing).

Indeed, in EC (2005), emphasis is placed not only on the importance of manufacturing and the synthesis of horizontal and sectoral measures but also on the need for a synergy between IP, competitiveness, energy and environmental policies in achieving the objectives of the Lisbon Programme. The document also explicitly adopts a systemic approach and emphasises the role of innovation and regulation in the context of globalisation. In addition, the mid-term review of EU industrial policy, as summarized in "EU Industrial Policy in Times of Climate Change and Globalization" (EC, 2007), places further emphasis on some of these themes, with a particular focus on energy intensive industries in the context of environmental impact and international competition, globalization and technological development.

The reasons for this change in approach are various and beyond the scope of this paper. However, it is worth noting that external pressure (such as the rise of East Asia) and decline of the European manufacturing might have played an important role. Certain indicators point to the comparative decline of European manufacturing, including for example the growth in productivity, slower development in the technology sector and lack of sufficient innovative capability (Jamet, 2006). Despite initial success in deepening economic integration and strengthening competition within the EU, there is a feeling that the emphasis on competition within the internal market is not in itself sufficient to serve

as the basis for a dynamic and innovative European economy that would ensure its competitiveness on the world stage (Ilzkovitz et al., 2007).

Corollary to this, demand from political leaders from countries such as Germany and France for policy change has also motivated the European Commission to act, the most notable example being the April 2002 *Financial Times* article by former Prime Minister of Germany, Gerhard Schroeder. Other public letters by European leaders such as Schroeder, Chirac and Blair also expressed fear of "de-industrialization" in the face of globalization. More recently, French president Nicolas Sarkozy has called for the EU to protect its industry in the face of US protectionism (Vucheva, 2009). Emergency measures to rescue the EU banking sector, for example, have in effect suspended EU competition policy (*The Financial Times*, 2009b). The new EU industrial policy, therefore, is largely rationalized as a response to the need for deepening the internal market and ensuring the competitiveness of the European economy *vis-a-vis* the emergence of new global industrial powers (Jouyet and Verheugen, 2007).

The importance of industry, 'deindustrialisation', 'competitiveness', the 'sectoral dimension', synergies of policies, systemic view, regulation, environmental and energy sustainability and the challenges of (semi)-globalisation (and now de-globalisation), in the knowledge-based economy, are all well known and accepted themes within the resource/systems-based perspective. Indicatively, these are discussed, among many others, in Pitelis (1994, 1998, 2001, 2007, 2009a), Pitelis and Antonakis (2003), Edquist (2005) and Lundvall (2007). In this context, EU policies in the new millennium are more in line than ever before with the evolutionary/resource/system-based view and they represent continuous and incremental progress in the right direction. The recent crisis

threatens to undermine this as it leads to attempts by EU nation states to protect their own (non-EU-wide) interests through national protectionist policies (*The Financial Times*, 2009b). They are, therefore, to be welcomed.

Despite this progress, however, the broad evolutionary/systems-based perspective and the (EU) competition-industrial policy implications derived from it suffer from various limitations. First, innovation and technological change are seen as the near exclusive determinants of value creation. Second, the economic (not just environmental and/or energy) sustainability of the value creation process of the system-wide level is not actually addressed. Third, value capture by economic agents and its impact on the sustainability of value creation are ignored. Fourth, the issue of catching-up and (thus) economic integration intra (and extra) EU are not discussed. Fifth, there is little recognition of the need to explore the issue of requisite supranational governance conducive to sustainable value creation, competitiveness and catching-up. In what follows, we attempt to fill these gaps by providing a more comprehensive framework of the nature and determinants of value creation, and by analysing the aforementioned limitations in this context.

IV. A New Conceptual Framework and the Issues of Economic Integration and Implementation

Value, Sustainability and IP

Wealth creation requires the availability of products, organisations, services, institutions and policies, which foster productivity and create value. Two major theories on the nature of value and value creation have been developed. The first one is the classical theory of Smith, Ricardo and Marx, which attributes 'value' to the cost of

production, in particular the labour power expended to produce a commodity (the 'labour theory of value'). The other one is the 'neoclassical' marginalist notion of 'value' of Jevons, Menger and others, who conceptualize value as the perceived 'utility' provided by a good to an economic agent. 'Utility', in turn, is affected by 'scarcity' (Dobb, 1973).

The determinants of value and wealth creation were the major theme of Adam Smith. In his Wealth of Nations (1776), Smith attributed the wealth-creating abilities of market economies to the 'visible hand' of the firm and the 'invisible hand' of the market. In his analysis of the 'pin factory', Smith observed how specialisation, the division of labour, teamwork and invention create value and engender productivity. The marvels of the 'visible hand' were they realised in exchange by the 'invisible hand' of the market: the free interplay of demand and supply by economic agents in pursuit of their own interest. The invisible hand helps to provide information, incentives, coordination, and to realise value through exchange. Competition can ensure that 'natural' prices will tend to emerge. Restrictive practices by, for example, 'people of the same trade' will hinder this outcome, calling thus for restraint and/or regulation.[6] In the classical tradition, international wealth creation and convergence may follow from Ricardo's theory of 'comparative advantage'; a result predicated, however, on the absence of increasing returns (Pitelis, 2009a).

In the neoclassical tradition, the focus shifted from value creation in production and realisation in markets, to exchange relationships, subjective value and efficiency in resource allocation. The aim of economics became one of 'economising', of rational choices between ends and scarce means which have alternative uses (Robbins, 1935).

Given scarcity, rationality and the need for economising, the economic aim became one of achieving an efficient allocation of scarce resources.

Efficient allocation has both a static and an intertemporal dimension. The former can be achieved through perfectly competitive markets. The latter depends on innovation and technological change. Unlike static efficiency, perfect competition or perfect contestability (a market with free entry and costless exit) need not lead to intertemporal efficiency, as they remove the incentive to introduce innovations - the Schumpeterian reward of transient 'excess profits'. For Baumol (1991), who echoes Penrose (1959), the best type of market structure from the point of view of intertemporal efficiency is big business competition. The potential presence of increasing returns, originally pointed out by Young (1928), suggests that imperfect market structures could well be inevitable, too.

Nonetheless, despite such challenges, neoclassical economists seem to share the belief that perfectly competitive markets and free trade can deliver the goods, and lead to sustainable value/wealth creation. This is true, for example, for the various Washington and post-Washington consensus-type views (Bailey et al., 2006; Pitelis, 2009a; Rodrik, 2009). A problem with the above reasoning, however, is that it fails to focus on innovation as a determinant of value creation. Moreover, it also fails to realise that wealth/ economic performance includes both a value creation and a value appropriation/capture element (and that the latter may impact negatively on the sustainability of the former). The resource-system approach improves upon the neoclassical one by focusing on innovation but it shares the other limitations discussed above. We try to rectify this below by synthesising and extending the resource allocation and resource creation views.

In a capitalist economy, value is co-created at the level of production (Pitelis, 2009b). It is then realised in exchange through the sale of commodities in markets for a profit. Scarcity affects value, but so does the cost of production. The efficient use of scarce resources, notably time, can be instrumental in increasing productivity. Firms are critical players in this context. The infrastructure of firms (organisation, management, systems), their strategy and corporate governance, their technology and innovativeness, the quantity, the quality and relations of their human resources (managers, entrepreneurs, labour) and the non-human ones, as well as their ability to exploit unit cost economies (such as economies of scale, scope, learning, growth, transaction costs and external) are also important determinants of productivity and value creation (Pitelis, 1998; 2009b). These determinants are affected by the external environment, which is comprised of two layers. The first layer is the meso-environment, which is industry conduct and structure and the consequent industry 'degree of monopoly'. The 'degree of monopoly' serves to realise value by determining the price/cost margin of the industry (see Cowling, 1982). The meso level also includes locational aspects and the regional milieu to include the region's 'social capital' (see Putnam, 1993). The four determinants at the firm level, in their interrelationship with the 'external meso-environment', determine productivity and value creation at the industry, sectoral and regional levels, as illustrated in Figure 1.

Moving outwards, the macro-environment (which includes the macro-economic policy mix and the nature and level of effective demand) has an impact on the context in which firms and industry operate and determines the current 'size of the market', and the value that can be realised at any point in time. The macro-environment also includes the

institutional context and, in particular, the 'governance mix', which is the 'market-hierarchy-cooperation' mix of economic governance.

The institutional environment provides 'sanctions and rewards', culture and attitudes and the overall 'rules of the game' (North, 1981). The 'governance mix' determines the overall efficiency of the mode through which the whole economy operates. The attached 'wheel of a nation' is influenced by the global context, which is the sum of each nation's 'wheel', the synergies between the 'wheels', and the institutions and organisations of global governance. They have an impact on the size of the global market and the overall ability of 'The Earth' to generate value and wealth. The capitalist firm is positioned centre stage in the wheel. Another important 'actor' is the government. It may, and does, influence the institutional and macroeconomic context, through laws, regulations, 'leadership', etc. The government can affect the meso-environment through its competition, industrial and regulation policies and the macro-environment through its macroeconomic policies.[7] It influences the determinants of value creation through its education and health policies, the provision of national infrastructure, as well as policies relating to innovation, 'social capital' and entrepreneurship.

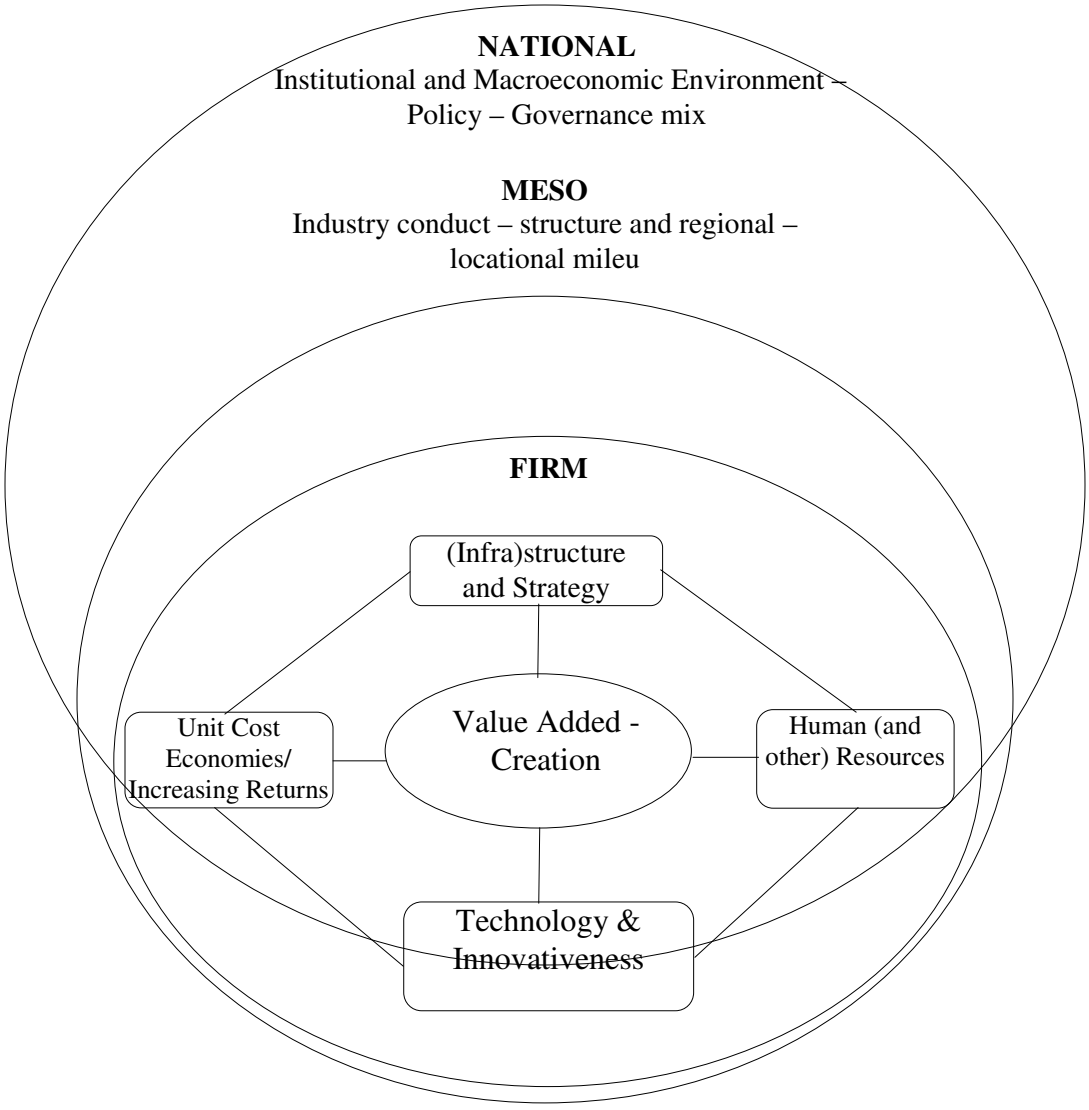

FIGURE 1: The 'Wheel' of Nations: the determinants of productivity and value creation at the firm, meso and national levels

Both the neoclassical and resource systems views fail to appreciate that value creation need not automatically imply value appropriation (or value capture). To appropriate value privately, firms (and also individuals and nations) pursue a panoply of value capture strategies; for example, firms can pursue monopolistic and collusive practices. Nations can adopt strategic trade policies while creating competitive advantages (Amsden, 2008) and adopting "positioning strategies" (Pitelis, 2009a). All

these can help countries to appropriate created value and therefore enhance their competitiveness and accelerate their catching-up (Pitelis, 2009a). However, the pursuit of value capture by one agent (whether legitimate or not) may impact negatively on the ability of another agent to further his/her objectives. This in turn may undermine the sustainability of the value creation process. This is an 'agency' issue which, however, is more complex and wider than the traditional neoclassical forms of owners and shareholders.[8] What we have in effect is multiple agency, hierarchically structured – that is, a hierarchy of agencies, between firms, nations and the world as a whole (as well as, of course, their various sub-units).

Starting first from the controlling group of the firm (the 'agent') and the corporation as an entity comprising of the sum of its stakeholders (the 'principal'), it can be that the pursuit of personal interests by the former compromise those of the latter. This, for example, is the case when the former pursue strategies that favour short-term share valuation growth and personal compensation packages and perks, which are beyond those required to provide them with adequate incentives to pursue the interest of the corporation as a whole, that is, sustainable value creation and capture. This undermines the sustainability of the corporation as a whole, and has understandably been the focus of recent corporate governance debates. The second layer is that of the corporation as the agent and the government as the principal. The ability of firms to realise value/wealth can, and often does, lead them to attempt to capture wealth as 'rent' through monopolistic and restrictive practices. A high degree of market power can thwart incentives to innovation and may prove to be inimical to productivity and value creation. In this context, the government (and its governance) becomes crucial. Sustainable productivity

and value creation requires competition and regulation policies that can thwart the creation and use of monopoly power (while allowing for an innovations-inducing 'degree of monopoly'), as well as policies that support small firm creation and survival and the diagnosis and upgrading of regional clusters.

In the third layer, nations themselves, now seen as the agents, can try to capture value by adopting strategic trade policies that can harm the process of global wealth creation. The aim of the 'global community' (now the 'principal') should be to require individual governments to adopt policies that enhance global productivity and value/wealth creation. Indicatively, governments of developed economies should refrain from policies that restrain trade, yet recognise the need of other governments to 'foster' infant firms and industries, for their expected competition, innovation and productivity effects. This is decidedly not the case in recent years. Following the recent crisis, protectionist policies by developed countries are now rampant in the USA and EU, threatening economic sustainability (see for example *The Economist*, 17 September, 2009).

The absence of global knowledge and a global monitor calls for diversity. In any country or society, a host of organisations and institutions exists - the family, the church, consumer associations, NGOs, state-owned enterprises (SOEs) - that can affect, through their interaction, the ability of firms' and governments' incentives to foster the process of productivity and value/wealth enhancement game. In this context, the issue is the specialisation and division of labour of alternative institutions and organisations, based on their respective capabilities in production, exchange, legitimacy, ideology and culture, and the identification of institutional and organisational configurations and conducts that

promote efficiency in the form of enhanced productivity and value creation. Competition and cooperation, self-interest and altruism, big businesses and smaller cooperating firms (such as in clusters) can all have an impact on the goal of sustainable productivity/value improvements.

A focus on the sustainability of value creation has implications for environmental, distribution and social policies, including migration, all of which follow endogenously from our proposed perspective. Excessive inequities in distribution and the abuse of the environment can thwart a country's ability to generate value. Limited health care and inadequate education undermine a country's more potent and valuable resource – the human. This threatens sustainability. Policies designed to deal with such problems are also part of a government's remit. In the absence of a 'Dr Pangloss', an approximate way of effecting sustainable value creation is through the free interplay, pluralism and diversity of institutions, organisations, individuals, ideas, cultures, religions, norms, customs and civilisations, as each can serve, in part, as a 'steward' or 'monitor' for the others. Having said this, it is crucial that this process is 'managed', 'guided' and 'moulded' through informed agency, so that democracy is married to performance. This brings the issue of supranational 'governance' and 'power structures' centre stage. A fundamental question is whether different types of power structures and thus supranational governance impact differently on sustainable value creation. It is beyond the scope of this article to address this issue in detail, but some observations can be made.

First, for corporate and public governance to contribute towards sustainable value and wealth creation, internal and also external controls are required, including national, supranational and global incentives and sanctions. Importantly, it is necessary to

eliminate corruption at all levels: intra-firm, intra-country (regulatory capture) between host governments and multinationals, and inter-nationally. All these presuppose a degree of trust, social capital and the 'ethical dimension'. Exclusive focus on self-interest may well be the strongest foe of sustainability.

Innovation, competition and cooperation (co-opetition) can positively influence all determinants of value creation. All the same, productivity enhancements may lead to advantages that can be used to restrict competition. The need for a competition (anti-trust) and cooperation (co-opetition) policy thus arises from the need not to thwart the beneficial effects of co-opetition on productivity and value creation. Firm cooperating strategies (for example, firm clusters) that enhance productivity should be facilitated in this context. Non-value enhancing forms of cooperation (like collusion), on the other hand, should be discouraged. The same is true for other restrictive business practices. Mergers and acquisitions should be examined on a case-by-case basis, as they may have value enhancing attributes (Jorde and Teece, 1992; Mueller, 2006), but they may also lead to market power, which can eventually stifle incentives for innovation and productivity. Pluralism and diversity should be encouraged, as they provide benchmarks for information comparison. Institutional changes that facilitate a productivity enhancing culture and ideology and value-adding legal frameworks should also be aimed at.

Industrial and competition policies should be compatible with macro-economic and other policies (notably education and health), but they should also be supported by a facilitatory institutional context. Douglass North (1981) has shown the importance of institutions and institutional change in reducing transaction and transformation costs and in increasing productivity and growth. Institutions, but also culture, attitudes and

ideology can be hugely important factors in economic organisation. Governments can be a potent catalyst in institutional change, as they possess a monopoly of force and the ability to legislate and regulate. Devising a facilitatory framework is part and parcel of industrial and competition policy. The neoclassical 'market failure' theory of the state assumes the institutional context is a given (Clarke and Pitelis, 1993). The possibility to vary it implies a more proactive role for the state. Olson (2005), for example, refers to the 'market augmentation' role of states. This could be extended to over not just augmentation of existing markets, but also creation of markets and co-creation, as well as the surrounding eco-system, which involved competitors, customers, suppliers and (thus) clusters (Pitelis and Teece, 2009).

In sum, our analysis points to the need for a broader conceptual framework for industrial and competition policy, to account for the role of innovation, cooperation, institutions and knowledge creation through institutional diversity and pluralism as well as market creation and co-creation. The need for a tough competition policy that discourages the emergence and exploitation of market dominance is maintained and strengthened in this framework. It is also extended to account for 'power structures' by individuals, nations and groups of nations, such as the EU. Our discussion of value capture, the role of 'embedded power structures' and the hierarchy of agencies goes further than extant neoclassical and resource-systems-based perspectives. It puts centre stage the issue of global sustainable value creation and its potential foes. This raises the issue of diversity and 'global governance' to thwart anti-sustainability practices of powerful players such as the EU itself. Consider, for example, the support the EU provides to Airbus and/or its Common Agricultural Policy. Both are anti-sustainability

and they thwart competition, innovation and trade. However, they are likely to continue to do so in the absence of diversity, stewardship and monitoring, alongside enlightenment and global monitoring. In practice, a supranational competition and regulation agency could arguably help address the issues of embedded power structures, the hierarchy of agencies, and sustainable value creation that neither the neoclassical nor the resource and systems-based perspectives address.

The aforementioned critical remarks on the evolutionary, resource-systems approach should not hide the fact that we feel this to be an improvement over neoclassical ideas and a step in the right direction. Innovation incorporates, by its very nature, sustainability and value capture characteristics that, up to a point, could help marry value capture to sustainable value creation. However, it does not suffice. In addition, sustainable value creation need not automatically imply competitiveness and economic integration, let alone addressing issues of implementation.

Economic Integration and Issues of Implementation

A problem with much of extant discussion concerning the role of competition and industrial policies is that it presupposes the existence of well-functioning markets, an entrepreneurial class and an educated and skilled workforce, and the existence of a structural and institutional framework, which facilitate the implementation of chosen policies. This is evidently not the case in emerging and transition countries but still not entirely the case in the EU either. The internal market in the EU, while integrated, continues to suffer from barriers to cross-border trade and investment (especially in services) and slow development of an internal market for knowledge. It also suffers from

slow and sometimes incomplete implementation of directives and inappropriate instruments (Ilzkovitz et al. 2007).

In the above context, it is important for nation states to engender the development of institutions and capabilities which are necessary to adopt industrial and competition policies in the first place.

Implementing industrial and competition policies requires setting up requisite authorities. Here the selection of competent, knowledgeable and independently minded individuals is crucial. They should aim at ensuring sustainable competitiveness, an important determinant of which is competition. They should not be 'captive' to business or other interests, and should coordinate with regulatory bodies and other authorities, domestically and internationally (Pitelis, 2003; Rodrik, 2009). They should be able to devise clearly articulated and transparent rules concerning the acquisition and abuse of dominant positions and vehicles for their attainment, such as mergers and acquisitions, as well as restrictive practices. At the same time they should recognize that competition policy is not a panacea for competitiveness; competitiveness depends significantly on the other determinants discussed. All these issues are closely interlinked. This implies the need for a systemic approach to industrial and competition policy that tries to address simultaneously the issues of doing, while also addressing the prerequisites, such as capability building.

Building on our earlier discussion, industrial and competition policies should thus not only be linked to the degree of competition in industries, but should aim at improving productivity and efficient resource allocation and creation. A prerequisite to achieving this is to encourage inter- and intra-firm competition so as to nurture conditions

favourable to the creation of new ideas, techniques, products, processes, organizational and institutional forms and, moreover, to exploit best for this purpose the information available - providing (and enhancing) attributes of economic organizations, notably markets, firms, states and people at large. Competition policy should provide incentives, support, mechanisms and institutions for achieving productivity and competitiveness, for example through linkages, joint inputs and resource mobility (Audretsch, 1998a). It should address 'state' capture by sectional interests – in part through striving for conditions of contestability in private and (up to a point) political markets – and a plurality of institutional and organizational forms, including, for example, support for SMEs. Pluralism can also enhance the generation and use of new knowledge.

The exact measures which need to be taken to achieve the above can vary. For example, the recognition of the benefits of cooperation, and therefore the need to ensure competition and cooperation, suggest the need for measures facilitating the 'clustering' of SMEs (Best, 1990; Best and Forrant, 1996). 'Clusters' of SMEs can also be a potent source of indigenous development for less favoured regions, countering a dependence on multinational firms, and can themselves be a determinant of inward investment (Pitelis, 2009a).

Firm size remains essential for efficiency through economies of scale and learning. M&As are often an easy way to do this and to rationalize, especially in declining sectors. A minimum efficient scale is also essential to compete in export markets. An alternative to acquiring the benefits of scale can be through clustering. Theory and (our own) experience (Pitelis, 2003) suggest the following "good practice".

1. Explore the possibilities of clustering. When these are present, try to develop clusters.

2. Allow and if need be encourage M&As of SMEs where clustering is not possible, and where benefits from scale are required for competitiveness.

3. Promote competition by gradually removing barriers to domestic competition, import competition, and export rivalry. Regulate any natural monopolies.

The successful implementation of industrial and competition policies requires an appropriate institutional framework. As put by North, 'the central issue of economic history and of economic development is to account for the evolution of political and economic institutions that create an economic environment that induces increasing productivity' (1991, 98). Examples of required institutional measures include the delineation and enforcement of property rights, education and health provision, and a pluralism of organizational forms and ownership structures, which exploit existing, and generate new, knowledge through economies of pluralism. It is also important to promote attitudes, values and generally culture conducive to dynamic competitiveness through innovativeness, thus to productivity, growth and convergence. Of course, these are easier said than done. A way through which these can be achieved is with the government assuming the role of a catalyst, by identifying and implementing, in close cooperation with the private sector, changes proposed by those nearer to the action, such as the private sector itself. Such *bottom-up* policies exploit dispersed knowledge and also promote subsidiarity and democracy. Precise actions, however, should be based on an analysis of each particular case. This is beyond the scope of this paper, but the following methodology can be proposed: first, a consensually agreed upon theoretical framework;

second, an audit of the external (international) environment; third, an audit of the internal (national) environment; fourth, deciding the *direction* of the strategy; fifth, its dimensions; sixth, the required actions; seventh, addressing the issues of prerequisites, resources and mechanisms for implementation; eighth, *feasible* actions; ninth, control-evaluation; and tenth, new actions for implementation (Pitelis, 2003).

To conclude, industrial and competition policy should focus on the nurturing of institutions, mechanisms, organizations and resources (notably human) that foster dynamic efficiency, productivity and value creation, competition and cooperation (co-opetition), other than price collusion.

Concerning the degree of competition per se, any measures taken to promote domestic competition by developing-emerging nations, should work alongside import competition and export rivalry. When steps are taken to support domestic industry, these should not be allowed to consolidate and become disincentives for improved competitiveness. A clear phasing out and performance-monitoring strategy should be in place. Measures to remove barriers to mobility are essential in this respect, as there seems to be the need to coordinate entry and exit policies (Frydman et al., 1999). In this context, mergers should be discouraged when there is risk of monopoly power and strategic barriers to entry, and mainly encouraged between SMEs.

Co-opetition should be of the type described in the case of clusters. Clustering can and should be seen as a new form of competition and industrial policy (Porter, 1998; Pitelis 2003). Clusters can provide locally-based development and can also be an attraction to inward investment. They are of the utmost importance in that they

simultaneously facilitate entrepreneurship, decentralization and locationally specific advantages.

Overall, in their complex interrelationships, the exploitation of knowledge through the existence of a plurality of institutional and organizational forms, the benefits of co-opetition also arising from these and appropriate competition policies, the related amelioration of the problem of state capture, and the parallel exploitation of the benefits of clustering, can help enhance competitiveness, especially when combined with appropriate value appropriation and "positioning" strategies (Pitelis, 2009a).

To summarize, industrial and competition policies should aim to enhance the benefits from competition and cooperation (co-opetition) for innovation, productivity and value creation. As noted, such benefits can fail to materialize when strong firms and nations employ their power to restrain competition and trade. In this context, mergers that can lead to the acquisition of monopoly power should be discouraged, as well as restrictive and collusive practices. Strategic trade policies, especially by developed nations, should be monitored and strongly discouraged.

V. Summary and Conclusions

Industrial and competition policies were long being motivated by neoclassical ideas, which are currently challenged by alternative views. In practice competition policies varied between and within countries and were often inconsistent with their alleged objectives. We suggested that the theory of value creation requires a synthesis of resource allocation and resource creation but also the identification of the requisite power structures that allow value creation not to be prejudiced by value capture. We developed

a perspective on the determinants of value creation at the firm, meso and supranational levels. We then explored the limitations of extant theory of the firm, concerning governance and value in its context, and explored some prerequisites of economic sustainability. Such sustainability requires both internal and external controls including the market, but also hierarchy (firm and state), as well as institutional and global controls. Institutional diversity and pluralism can help effect mutual 'stewardship' and monitoring. For sustainable value creation, corporate governance needs to be aligned with national and global governance in a way that thwarts the potentially negative impact of some agents' pursuit of value capture on sustainable value creation.

Industrial and competition policies should be seen within the broader context of enhancing sustainable value creation. Competition policy should aim at maximising the net benefits from co-opetition. The road to sustainable value creation is not one-way. Countries should exploit the informational benefits from the existence of a plurality of institutional and organisational forms. Theory and history suggest there are no panaceas. Current EU policies are a step in the right direction, but need to pay more attention to the issue of economic sustainability, the link between corporate, public and global governance, and the impact of different power structures and hierarchies of agencies on industrial policies for sustainable value creation. The limitations of self-monitoring and diversity suggest the need for supranational competition and regulatory policy organisation with sustainability as its core agenda. This may operate alongside enlightenment and mutual stewardship and monitoring to help sustain the value creation process. Sustainable value creation need not automatically lead to integration and catching-up. For this to be effected special considerations apply, not least good practice

implementation. Industrial policies can also help facilitate European economic integration and enhance the EU's competitiveness and catching-up (with the US), thus realising its potential and goals.

ACKNOWLEDGEMENTS

This paper is based on and develops ideas in Pitelis (2003, 2007). The authors are grateful to David Bailey, Miroslav Jovanovic, Joseph Mahoney, Anita McGahan, and Roger Sugden for useful comments and suggestions on earlier drafts.

NOTES

1. Industry usually refers to manufacturing. This, however, tends to recede, given an emerging fuzziness of the boundaries between manufacturing and services; see Pitelis and Antonakis (2003) for a discussion.

2. For other definitions and a discussion of international competitiveness see Aigigner (2006a, 2006b), Pitelis (2009a).

3. Well known early oligopoly models were the 'limit pricing', the contestable markets and the 'generalised oligopoly' models. Whether prices will be competitive (or contestable), limit prices or monopoly prices will depend on the existence of barriers to entry and exit (mobility barriers). These need not be only structural (such as minimum efficient scale), but can also be strategic, through conscious action by firms to restrict entry. Instead of reducing prices, however, firms can follow other strategies such as advertising, innovating, investing in excess capacity and/or producing many apparently competing products (product proliferation) with the express purpose of reducing entry.

Depending on the extent and degree of success of such actions, the resulting industry price-output outcome can be anywhere between perfect competition and monopoly (see Pitelis, 1994).

4. See Wignaraja (2003), Edquist (2005), Lundvall (2007) and Pitelis (2007, 2009a).

5. However, it would be dangerous to generalise. For example, it is questionable as to whether the European commercial aircraft industry could have developed without government support.

6. Schumpeter (1942) later emphasised the role of innovation and creative destruction as a determinant of economic performance. Penrose (1959) explained firm endogenous growth through intra-firm knowledge creation, leading to 'excess resources', an incentive for growth. Building on Penrose, Richardson (1972) has pointed to the ubiquitous nature of inter-firm cooperation, in forms other than price collusion.

7. On the link between industrial and macroeconomic policies, see Michie and Pitelis (1998) and Bailey and Cowling (2006).

8. See Alchian and Demsetz (1972), Berle and Means (1932), and Jensen and Meckling (1976).

9. See Bianchi and Labory (2006) and special issues of the *International Review of Applied Economics* (2006), the *Journal of Industry, Competition and Trade* (2006) and *Policy Studies* (2007).

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