Interrelation of Intellectual Property Rights and Competitiveness: FDI inwards and FDI outwards

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The spreading recognition of the importance of competition has been supplemented by a persistent process of globalization. In a knowledge-driven economy, the successful protection of IPR is emerging as a crucial ingredient for commercial success. The two bodies of laws are complementary because both pursue a welfare objective. IP laws do so by creating and defending the right of innovators to exclude others from using their ideas. Antitrust laws protect dynamic competition in the marketplace, while intellectual property laws protect the means to receive earnings on the investments needed to innovate. The economic analysis utilizing the author’s zekipr1 index shows a complementarity of IPRs and competitiveness regarding FDI inwards and FDI outwards.

Keywords: Intellectual property right, FDI, competition law

Globalization would be deemed a good thing insofar as it leads to progress in economic circumstances and standards within various countries, notably developing ones.¹ The channels through which globalization affects economies include trade, portfolio investment and foreign direct investment (FDI). The different types of technologies may flow across countries through a range of means such as trade, FDI and licensing. There are modes of FDI such as mergers and acquisitions, joint ventures and new plants; each with their own distinctive characteristics, advantages, and disadvantages. In order to survive competition in a foreign market, a company must possess some ownership-specific assets such as proprietary knowledge, technology, organizational structure, management and/or marketing skills. In this regard, FDI is above all significant because it is both a source of capital and a provider of knowledge about production techniques.

The increasing recognition of the importance of competition has been supplemented by the constant process of globalization and a clear increase in the elimination of obstacles to the flows of trade and global investment.² National competition laws have their limits; hence they are powerless to tackle international restraints successfully. Moreover, national competition laws can converge towards some common points and standards and as a consequence, there has been an effort for competition law enforcement to become extra-territorial over the years since there is a need to internationalize competition law. It is argued that bilateral cooperation, introduction of an international competition code and harmonization and convergence of national competition systems could lead into an international system of competition law.³

Productive efficiency suggests that costs of creating goods are diminished. Allocative efficiency purports that market prices for goods are close to the incremental production costs. Dynamic efficiency indicates that the suitable amount of innovation takes place for both creating new products and falling costs of existing ones. To that extent, competition is a mechanism which has the only mission of bringing about allocative effectiveness. Competition in a market economy generates, preserves, and augments all three types of efficiency. Antitrust/competition law maintains the business environment such that this competition can thrive. Departure from competition means a loss of allocative and perhaps productive efficiency.⁴

Additionally, competition law should facilitate static and dynamic efficiency. Innovation and diffusion of new products and technologies is a key result that effective competition should bring about; namely, dynamic efficiency. The characteristic of competition law is the protection of those principles and practices which facilitate the efficient functioning of markets. The majority of the worlds’ systems of

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competition law share many common features including prohibitions on certain horizontal agreements such as cartels, specified vertical restraints and abuses of market power by companies. Moreover, sloppy competition law enforcement by countries produces ambiguity, generating incentives for companies who utilize these countries as ‘competition law havens’ leading to distortions of competition in the countries involved and beyond.

Intellectual property rights (IPRs), granted as patents, copyrights, trademarks, etc., perform a significant role in promoting innovation and sustaining economic growth. They also allow their holders to keep out, for a limited amount of time, other parties from the remuneration arising from the new knowledge and from the commercial use of innovative products and developments based on that new knowledge, thus motivating others to allot financial and human resources in R&D.³

In the post-industrialization epoch, physical goods and assets play smaller roles in a company’s growth. It could be argued that the earnings from utilizing knowledge assets could be expanded by increasing returns, integrating with information technology and introducing new perspectives to intellectual property rights. The above steps build a firm basis for companies’ growth and innovation. However, for a company to flourish it cannot merely make use of IPRs, the other types of assets also need to be considered.

In a knowledge-driven economy, the successful protection of IPR is emerging as a crucial ingredient for commercial success. With escalating levels of international trade, the quantity of trade concerning IPR has increased, triggering the dedication of significant effort and money to efficient protection. The digital revolution and other technological breakthroughs of the past several decades have brought intellectual property to the forefront of economic, social, and political interest.⁴

Positive law and economics utilize economic analysis to predict the consequence of various legislative rules and in general states that common law is effective; while normative law and economics make policy suggestions based on the economic consequences of a mixture of policies and in general state that the law should be resourceful. It can be said that positive analysis illustrates, explains and predicts, while normative analysis compares alternatives and proposes solutions.

The aim of this article is the legal and economic examination of the complementarity of IPRs and competition and proof of the same with reference to FDI. Firstly, the background to FDI, competition and IPR is presented. Secondly, the interrelation of competition and IPR from a legal point of view is investigated. Thirdly, the outcome of the legal investigation is valued independently and in combination by way of correlation between the author’s IPR index zekiprl and zekipr2 (ref. 6) and GCI (the Global Competitiveness Index 2010–2011). Finally, an economic assessment of the impact of competition and IPR upon FDI inwards and outwards by a way of regression analysis is illustrated.

Foreign Direct Investment

Foreign direct investment embodying capital, technology or some intangible advantage is the act of establishing or acquiring a foreign subsidiary over which the investing company has extensive management control. Additionally, FDI assumes importance as it can generate shifts in consumption, production and technology. While the crucial participants in FDI activity include the capital-importing host country as well as the investing company, the capital-exporting home country too has an important role to play. FDI is supposed to flow from capital-rich economies to capital-poor economies with somewhat higher rates of return to capital. Foreign direct investment is far from monolithic but covers many different types of investment activities.⁷

A majority of FDI can be categorized into one of the three forms of production - resource-seeking, efficiency-seeking, and market-seeking.⁸ Efficiency-seeking FDI entails locating a part of the production process abroad to reduce overall costs and increase competitiveness. Market-seeking FDI is as a rule a horizontal production structure. There is a range of studies concerning the determinants of FDI but even though the Dunning’s OLI paradigm provides some guidance, it does not offer a fixed list of probable variables to test. The comparative importance of different determinants for various types of FDI¹⁰ has to be taken into consideration but in general, most of the heterogeneous determinants may be categorized under three headings: institutional factors (the security of property rights, effectiveness of the legal system), market related factors and technological factors.
**Competition Issues**

Freedom of competition covers the freedom of companies to choose their action parameters. Market power might impede both freedom of choice between different suppliers and freedom to decide on companies’ action parameters in competition with other companies. Competition law has to take into account the effects of restrictive agreements, mergers, and business behaviour on consumer welfare and also on a set of protected rights of competitors which might undergo losses through the infringements of these rights.⁵

One question that arises - is the central aim of antitrust interventions to guarantee competition in markets to the benefit of consumers? In the 1960s and 1970s, the courts and agencies embraced the economic theories of a group of Harvard scholars who believed that companies with market power would act in an anti-competitive manner. Under the Harvard School method, the courts and agencies supposed the illegality of any mergers, joint ventures, or agreements that allowed companies to gain, increase, or exercise market power, irrespective of whether the conduct had the prospective to benefit consumers by lowering prices or increasing output.¹¹ On the other hand, beginning in the late 1970s, the courts and agencies began to accept the theories of a group of University of Chicago academics, who thought that the only rightful aim of the antitrust laws was to advance consumer welfare and so the courts and agencies engaged in a broad factual inquiry to confirm the effects of specific conduct on consumers before finding it illegal.¹²

The Harvard School theory prohibited innovative forms of competition that could have improved economic effectiveness, while the Chicago School theory permitted competitors to indulge in certain conduct that harmed consumers in many domestic markets. Thomas A. Piraino Jr.¹³, states ‘The courts and agencies should construe antitrust analysis as a continuum, under which they can vary their degree of inquiry depending upon the likely competitive effects of the particular conduct at issue’.

Zekos¹⁴ argues that balancing the economic environment on the basis of a form of perfect/free competition allowing any party to have the same possibilities in innovation having merely to put his/her ability and capacity in inventing new materials, products and ideas should be the task of competition and intellectual property laws. Moreover, the idea of allowing monopolies/oligopolies in the name of prospective consumers’ welfare to concentrate the worldwide production and delivery of product, services and research activities is not proper. This is due to the fact that a small number of people gain the profits of innovation and not the consumers, taking into consideration that finally the low cost products are not always in favour of human health and life, not mentioning environment pollution.

There is competition in the market versus competition for the market and competition in innovative industries is best pictured as a sequence of races to develop new technologies. Technological opportunity and winner-takes-all or winner-takes-most outcomes suggest that the form of competition that matters most from a welfare point of view is not that which takes place in a product market as is the case for mature industries. It is competition for the product market which means a race to be the first to bring a new product to market or to produce by means of a new technology. In contrast to mature industries where new participants gradually acquire market share, successful entry in innovative industries often results in a rapid replacement of the dominant incumbent. An increase of competition in a leveled industry lowers each company’s profit ‘level effect’.¹⁵ An escalation of competition in an un-leveled industry shrinks the profit of the least competent company but it improves the profit of the most competent company provided competition is intense - ‘variance effect’. As the technological gap between the most competent company and the least competent company increases, stronger competitive force lowers the amount of active companies in the market.

The EU Commission stipulated that the consumer welfare standard should be the only normative standard. In the DG Competition discussion paper, it is argued that the aim of the application of Article 82 is the ‘protection of competition on the market as a means of enhancing consumer welfare and of ensuring an efficient allocation of resources. [... ] That means, it is competition and not competitors as such that is to be protected.’ The existence of Articles 81 (Article 101 of the Treaty on the Functioning of the European Union, TFEU) and 82 (Article 102 TFEU) in the EU Treaty provides frameworks to protect against concerted practices as well as exclusionary conduct by dominant companies. Moreover, the core objectives of the competition policy within EU are market integration, equity, and effectiveness persuading companies to carry on and modify themselves to the technical advancement as well as rationalizing their manufacture and supply.¹⁷
The key purpose of competition law, on the one hand, is to regulate company behaviour that might impair the competitive process. Competition policy (or ‘antitrust policy’ in American terminology) is, accordingly, of central substance for the effective functioning of market economies. Competition policy allows that in some conditions, society would be better off by permitting for limited market restrictions, monopolistic profits and short-term allocative inefficiencies, when these can be confirmed to advance dynamic efficiency and long-term economic growth. Etro verified that high market concentration is in fact a result of both price and non-price competition rather than an indicator of market power and lack of competitive forces when an environment of free entry prevails. However, the existence of a market leader can further boost the competitive force and toughen the price competition.

**Intellectual Property Rights**

Intellectual property is a legal means by which the inventor can control entry of intangible assets and rule out others from using them. Each mode of intellectual property (IP) protection has discrete characteristics and limitations. Managing IP is no more a legal department’s affair because it involves a whole range of issues from legal documents to strategic assets. Above all, companies are used to delineating intellectual assets in the perspective of their own legal definitions of IP focusing on restricting the use, sale, and transfer of intellectual capital in forms such as patents and copyrights. On the contrary, leveraging intellectual capital entails that managers carefully advance rather than restrict its use, reflecting an expansionist attitude rather than a reductionist one seeking out opportunities. Thus, development and exploitation of intellectual property assets should concentrate on worth extraction and maximization, rather than mere legal documentation or cost minimization. Intellectual capital has emerged as the foremost unique competitive advantage of companies and so intellectual capital commercialization does not occur from licensing or payoff through litigation only, but also takes place from appropriately merging physical assets, business strategy, and intellectual assets to obtain profit and growth. The strength of IPRs affects not only the location choices of multinational entities but also the quality of technological knowledge they decide to transfer.

Intellectual property rights are not based on the same economic rationale as competition rules. Frequently, IP law is articulated in non-economic terms. Intellectual property aims to stimulate dynamic efficiency, which is expected to be more in an economic sense. Moreover, knowledge, when produced, is an IPR that gives the right to employ it in a way which gives prospective innovators economic motivation to innovate. The grant of a patent converts a decline in allocative and maybe productive static efficiency to expansion in innovative activity having satisfactory incentives to innovate despite the rights granted to an early innovator. Consequently, the extent of monopoly awarded by a patent has to be limited so as not to intervene with the incentive to innovate for succeeding innovators. Patents may grant legal monopoly rights in more than one antitrust market but the ownership of a patent does not burden the patent owner with a presupposition that it possesses monopoly power in any specific market.

The significance of IPRs differs to a large extent through variables such as the technological nature of the activity and the nature of the economy. Any property right, rooted in real or intellectual property, can be abused in business conduct resulting in an antitrust violation. It is very difficult to predict a conflict between the granting of patents and antitrust rules at the time of the grant due to the time separating the patent examination and the prospective antitrust violation, and numerous other factors involved in how the patent holder develops products and accomplishes market power. Patent examiners do not think about prospective antitrust violations prior to granting a patent.

The key objective of IP law is the backing of new and improved works—whether technological or expressive. The other rationale of IP law deals with a distinctive economic problem—ensuring the integrity of the marketplace. Moreover, the rationale of IP is to advance innovation and productive knowledge creation. The legal exceptionality established by intellectual property rights cuts down transaction costs, promotes dissemination of knowledge and inspires investment in valuable ideas consistent with the underlying principles of market economies.

A vital target of IP law is to reward innovation and creation throughout the granting of exclusive rights to utilize a new invention, new information or a cultural good. The return derived from IPRs is directly correlated to the duration as well as the scope of those rights. In fact, competition policy has a role in limiting monopolistic abuses linked to the exercise of IPRs.
In competitive economies, the granting of most patents, copyrights, and trademarks amounts to a thin piece of market power that is unlikely to adversely affect consumers. In contrast, IPRs can augment dynamic competition by stirring up investments in new methods and differentiated products. Auriol and Biancini\textsuperscript{25} say that ‘increasing the level of protection in the less developed one does not always increase global welfare. We show that an incomplete protection regime in which the emerging country does not protect innovation can be preferred and this regime does not need to decrease innovation.’ Even though technological opportunity turns out to have increased extensively in areas such as software and biotechnology/nanotechnology, leading to more innovation, and thus more patenting; patenting motion may also have increased separately due to the underlying rate of innovation.\textsuperscript{26}

**Competition Policy and the Exercise of Intellectual Property Rights**

The interface between competition policy and intellectual property protection should trade off short-term inefficiencies which are anticipated to be the price that society has to pay in order to get the ‘reward’ of long-term economic growth. On the other hand, there is always a risk of reducing social welfare by granting excessive market exclusivity and extra-profits compared to that needed to recover the investments made and guarantee adequate incentives.

It is worth noting that courts\textsuperscript{27} use both the presumptions of the Harvard School and the empirical economic analysis of the Chicago School to substantiate the consumer welfare effects of competitive conduct and categorize all competitive conduct on a scale according to its probable effect on consumers. On the one hand, when the competitive effect of the related conduct is apparent, the courts can shelter presumptions alike to those favoured by the Harvard School. On the other hand, when the competitive effect of the applicable conduct is not apparent, the courts can engage in a more detailed economic analysis comparable to that favoured by the Chicago School. The Supreme Court\textsuperscript{28} pointed out: ‘[O]ur categories of analysis of anticompetitive effect are less fixed than terms like ‘per se,’ ‘quick look,’ and ‘rule of reason’ tend to make them appear.’

The spirit of the Harvard school view was that allowing a lot of small companies to exist adds to competition rather than a small number of companies. This is in fact right but in reality bigger companies in some fields can produce better goods at lower prices taking into account economies of scale. The notion of competition changes according to the global circumstances relating to technology and product demand and thereby the concentration of companies. In fact, competition means freedom to compete in any market under the same terms which means existence of many companies and the existence of the possibility for everybody to be able to freely enter the market and compete with each other under the same terms. In reality, competition under this notion is an ideal which does not exist and so there is a need for the establishment of conditions under which companies can enter a market and stand a chance to compete with their rivals in the market under fair conditions.\textsuperscript{5} The approach that any mergers are allowed as long as consumers can benefit from the agglomeration is wrong because the notion of competition does not exist following this approach and everything should be allowed as long as consumers benefit from the outcome of a severe war among companies. In reality, people arguing that consumers benefit from mergers regardless of the elimination of competition many times do not take into consideration the impact of mergers upon other factors influencing the life of consumers such as pollution, environmental destruction caused by big companies that are not measured in the notion of consumers benefit. A modified approach of the Harvard school understanding of competition by identifying specific types of agglomeration which are proven to be always harmful to competition and thus disallowed, that is, permitting other forms of merging or co-operation will be helpful both for consumers and competition. The loophole of the economic approach endorsed by the Chicago school is the vagueness and complexity of the economic analysis and the uncertainty caused by economic calculations which comprise an econometric model rather than simply specific economic factors, indicating always an uncompetitive impact upon the market.

Intellectual property is at the centre of the ‘new economy.’ New economy products are characterized by declining average costs over a range of output, high rates of innovation, and network effects. Intellectual property rights’ holders have expanded the boundaries of their claims, bringing those rights into ever-greater conflict with the primary principles\textsuperscript{29} and assumptions of the antitrust laws. Companies in the ‘old economy’ network industries\textsuperscript{30} such as
telecommunications companies, and integrated electric power companies used their control over network links to exclude competitors.

The antitrust and patent laws were previously thought to represent opposing policies encouraged by the antitrust presumption that a patent not only conferred exclusive rights to one product or procedure, but also guaranteed monopoly power in a relevant market, in spite of offered substitutes. In fact, courts and federal agencies regarded patents as conferring monopoly power in a relevant market. It has to be taken into account that exercise of monopoly power, including the charging of monopoly prices, due to the exercise of a lawfully gained monopoly position will not be against the antitrust laws. Judge Posner explained, ‘It is not a violation of [the antitrust] laws to acquire a monopoly by lawful means, and those means include innovations protected from competition by the intellectual property laws.’

At a high level of abstraction, the two bodies of laws seem complementary. Both pursue a welfare objective. IP laws do so by creating and defending the right of innovators to prohibit others from using their ideas or forms of materialization providing economic agents with the motivation to engage in efforts engendering technological innovations and new variety of artistic expression. Moreover, the US has recognized the complementary purposes of the intellectual property and antitrust laws. Antitrust laws protect forceful competition in the marketplace, while intellectual property laws protect the capability to receive a return on the investments needed for innovation. Both promote competition among competitors to be the first to enter the marketplace with a much-needed technology, product, or service. While IP law purposely subjects intellectual assets to the sole control of right owners, competition law seeks to preclude market barriers benefiting consumers by advancing competition among a multiplicity of suppliers of goods, services and technologies. According to Dolmans et al., the objectives of EU competition law and IP law are in fact the same, promoting the progress of innovation and investment to the advantage of consumers and thus dynamic efficiency is a shared objective for competition law and IP law.

Society acquires four kinds of benefits from granting short-term monopoly rights to innovators – (i) the incentive of private innovation as the primary economic gain of IPRs, (ii) the utilization of the new knowledge in productive activity leading to higher incomes, employment, and competitiveness for the economy as a whole, (iii) the spreading of new knowledge to other agents due to IPRs and contractual agreements (procurement, licensing or sales) or diffusion and (iv) the increase in the cost of technology to the buyer due to the legal framework.

The focal function of IPRs is to resolve the market failure problem by provisionally entitling innovators with property rights consigning to them the benefits coming from their intellectual work, while granting suitable safeguards against free-riding. Nevertheless, IPRs, while ensuring the exclusion of rival companies from the exploitation of patented technologies and derived products and processes, do not automatically award market power to their holders. The simple existence of an intellectual property right does not assume the existence of market power and so IPRs do not grant automatically a monopolistic market power to right holders.

Only when alternative technologies are not accessible, can IPRs be said to confer to their holders’ monopolistic positions in related markets appropriately defined. If IPRs bring monopolization then there is the actual prospect that the legal protection accorded through IPRs is too strong and the emergence of anti-competitive outcome could jeopardize social welfare. The course of innovation is constantly related to the expected appropriation of interim monopoly rents produced by the implementation of the innovation. If IPRs generate additional barriers to entry for competitors, then they can notably change the incentives to put into operation innovative processes. Feldman says that if innovation is not driven by IPRs then the legal protection plays merely the role of inhibiting entry into related markets as leveraging strategies. Scherer argues that competition plays a much more effective role in fostering innovation than intellectual property, while a considerable skepticism has been raised ‘toward monopoly positions that have been sustained through the accumulation of internally-developed patents for longer than the 20 years contemplated in the current patent law’. For that reason, the intellectual property context should be designed so as to effectively encourage as much as possible the entry threat of more ‘imaginative’ competitors and as a result to prevent insulation of a dominant company.

There should not be a presupposition that a patent or other IPR creates market power which means that a thorough market analysis is needed to ascertain the
scope of the relevant market and extent of market power of the patented invention. The existence of monopoly rents in a product market is the focal motivation for competitors to enter the market by imitating the dominant company. Nevertheless, imitation producing destruction may vary from one market to another, in accordance with level of expected rents, the ambiguity over the return of the investments and the legal protection of intellectual rights.

The US antitrust law acknowledges that many forms of collaborative conduct can be efficiency enhancing and as a result, most types of collaboration are analysed under the rule of reason balancing prospective anti-competitive effects against pre-competitive efficiency gains. In Standard Oil Co v United States, four firms that owned substitute patents for processes to crack oil to obtain gasoline formed a patent pool with minimum fees. In the decision for that case, the Supreme Court acknowledged, ‘Any agreement between competitors may be illegal if part of a larger plan to control interstate markets. Such contracts must be scrutinized to ascertain . . . whether their effect is to suppress or unduly restrict competition... And pooling arrangement may obviously result in restricting competition.’ Ever since Standard Oil Co v United States, any pool of substitutable patents has been assumed to have anti-competitive effects. The guidelines state that cross-licensing and patent pools may present both pre-competitive and anti-competitive effects. Pre-competitive effects may result from integrating complementary technologies, reducing transaction costs, clearing blocking positions and circumventing expensive infringement litigation. Anti-competitive effects may occur when the arrangements embrace collective price or output limit, or grant back requirements that may restrain R&D by parties. Kato argues that ‘a pool of substitute patents may promote competition under certain conditions, thereby enhancing social welfare in the product market.’

There can be circumstances where IPRs will grant market power, such as when a patented invention controls a relevant market, acceptable under American IPR and antitrust law, a key incentive to engage in innovative activities; and the IPR laws utilize that incentive to advance innovation. A violation of US antitrust law involves anti-competitive conduct; conduct that is neither competition on the merits nor efficiency-enhancing excluding competitors or prospective competitors from the market enabling the IPR holder to generate, preserve, or extend its market power.

In most developing countries, IPRs have been broadened and strengthened in the absence of an effective body of competition law, contrary to developed countries where the introduction of higher levels of IP protection has taken place in a normative background providing robust defences against anti-competitive practices. Even though competition law can be a vital means to limit the damaging effects of IPRs, most developing countries do not utilize such laws to amend anti-competitive uses of IPRs, given the lack of legislation, ineffective implementation or lack of policies to deal with the IP-competition correlation. Consequently, a broader competition policy approach may be especially valuable in developing countries to make certain a pro-competitive use of IPRs. Developing countries can pursue their own understanding of competition law and IP as there are no international rules (with the exception of Article 40 of the TRIPS Agreement) that hamper the competence of such countries to discipline IP-related anti-competitive behaviour.

As mentioned earlier, the purpose of IP laws is to further technical and economic progress for the final benefit of consumers; an objective which is pursued by a system of free and efficient competition. Conflicts have to be solved by striking a fair balance between the justifiable interests of IP and competition law. Under EU law, the European Court of Justice (ECJ) has developed a general principle according to which, on the one hand, the EC competition rules do not affect the existence of the different IPRs, but, on the other hand, the exercise of IPRs remains subject to those rules, specifically to the terms prohibiting restrictive agreements and the abuse of a dominant position.

The use of IPRs in reference to their particular substance is not influenced by the European Courts’ case law on the relation between IPRs and competition law. Standard use of an IPR is immune from competition rules interference. The actual concern that competition law has, is not with the existence, but with the application of IPRs. In fact, the existence/exercise dichotomy is a flexible means developed by the ECJ to make possible policy decisions, introduced firstly in Consten & Grundig v Commission and elaborated further in Deutsche Grammophon Gesellschaft v Metro-SBGroßmarktes GmbH. ECJ jurisprudence has been displayed by clamping down on the exercise and not the existence of IP rights, despite the fact that the distinction between existence and exercise has also been
considered as not credible. In *Merck and Co Inc v Prime crown Ltd (Merck II)*, it was stated that a property right which cannot be exercised has no usefulness but it could be said that the existence and the prospect of using it discourages many actions and so there is no need for actual exercise of the right. Furthermore, though the existence/exercise distinction is not explicitly documented under US law, basic standards in terms of IPR licensing and competition law, such as simple acquisition of IPRs not being illegal and enforcement of IPRs possibly constituting monopolization under Section 2 of the Sherman Act have been well-recognized.

Competition law draws a line between allowed business strategies and abuse of IPRs; a line which is often distorted by horizontal agreements, exclusionary licensing restrictions, tie-in agreements, disproportionate utilization of IPRs and other selling practices. Moreover, there is a probable abuse of monopoly pricing, in particular, in developing countries where operative substitutes to IPR-protected products may not be immediately available. The limited monopolies established by IPRs are not *per se* anti-competitive or exploitative but only turn anti-competitive when the IPR holder broadens those rights further than their intended and proper scope.

Patent law advances the dissemination of knowledge by making the grant of a patent conditional on the revelation of vital characteristics of the innovation for which a patent is sought facilitating access by other innovators to the knowledge embodied in the patent. An additional motivation to diffusion is offered by provisions that make it feasible to take advantage of intellectual assets via licensing arrangements. Thus, diffusion seems coherent with competition goals. To that extent, antitrust examination and intervention are *ex post* to the patent grant. Economic theory implies that it is inappropriate to immunize a patent holder from antitrust liability when it attempts to widen its patent monopoly into adjacent markets, since it could shrink consumer surplus. Nevertheless, applying antitrust law, courts have found that monopolists may be liable for unlawfully extending their monopolies into adjacent markets in many areas such as computer peripherals and software applications; aftermarkets for replacement parts, service and maintenance of durable goods; design changes to medical devices; and changes in drug formulas. Although the boundary between patents and antitrust is not evidently delineated, the courts are nevertheless reluctant to give antitrust immunity to patent holders when they control market power in adjacent markets.

The interface between IPRs and competition law has developed a number of types of restraints on competition making very complex the relation between IPR and competition. The US Supreme Court recognized that the antitrust and patent laws could co-exist. The EU policy has evolved from a liberal approach in earlier years to more economics-centric approach echoed in the block exemption for technology transfer agreements of 2004, accompanied by the relevant Technology Transfer Guidelines, which explicitly cover patents. In *Nungesser* the ECJ concluded that exclusivity provisions did not automatically infringe Article 81. Transactions involving IPR agreements often generate abuse of dominant position under Article 82. As was made clear once again in the Microsoft case, the simple ownership of an IPR does not constitute adequate objective justification to refuse a licence, provided other specific circumstances would point in the direction of a compulsory licence.

The exercise of exclusive IPRs which give monopolistic power leading to allocative inefficiencies runs counter to the core objective of competition policy which is the protection of the competitive process making certain an effective allocation of resources, lower prices and greater consumer choice. The legal analysis shows that competition policy and IPR interrelate in many significant dimensions and there is a conflict between competition and IPR requiring a delicate treatment of their complimentary role in an economy which has to be affirmed by an economic investigation.

**Data and Methodology**

A large sample of 79 countries has been assembled for this research, covering the time period 1990-2010. The sample of countries is diverse, representing several income groups and institutional environments. Data for the independent variables, such as ‘GDP’, ‘trade’ and ‘inflation’, are from the World Bank Indicators (1990-2010). The key independent variables of interest are the strength of IPRs and Global Competitiveness Index (GCI). Using the Global Competitiveness Index 2010–2011, the *zekipr1* and *zekipr2* (ref. 4), the impact of IPRs and competitiveness upon attracting FDI is examined.
The current IPR indices are formed after the examination of the IPR laws in force in the investigated countries till the end of 2010 by the combination of the following parts:

1. Zekipr1=$ \beta_0 + \sum_{k=0}^{n} \beta_j X_{ij} + \epsilon_i$

   where, for the $i^{th}$ case, $Y_i$ is the response variable, $X_{i1},...,X_{ip}$ are $p$ regressors, and $\epsilon_i$ is a mean zero error term. The quantities $\beta_0,...,\beta_p$ are unknown coefficients, whose values are determined by least squares. Linearity means that the relationships between the predictors and the outcome variable should be linear.

   In detail, the following are the econometric models which are used in this investigation in order to assess the impact of IPRs and GCI upon attracting FDI:

   \[ FDI_i = b_0 + b_1 \text{Zekipr1}_{it} + b_2 \text{GDP}_{it} + b_3 \text{Trade}_{it} + b_4 \text{Inflation}_{it} + u_{it} \]  
   \[ \text{FDI}_i = b_0 + b_1 \text{GCI}_{it} + b_2 \text{Zekipr2}_{it} + b_3 \text{GDP}_{it} + b_4 \text{Trade}_{it} + b_5 \text{Inflation}_{it} + u_{it} \]  
   \[ \text{FDI}_i = b_0 + b_1 \text{GCI}_{it} + b_2 \text{GDP}_{it} + b_3 \text{Trade}_{it} + b_4 \text{Inflation}_{it} + u_{it} \]

   The first thing to notice are the two subscripts: $i$ denotes the $i^{th}$ individual country and $t$ denotes the $t^{th}$ time period. FDI represents: the FDI inflows, FDI outflows, FDI outflows stocks, FDI stocks, FDI inflows on merchandise and services, and FDI on tertiary sector respectively. $b_0$ is the intercept and Zekipr1, Zekipr2, GCI, GDP, trade and inflation are the explanatory variables.

   The following are the variables which are utilized in this regression analysis concerning the impact of IPRs upon both FDI inflows and FDI outflows in comparison:

   (a) Gross domestic product (GDP) refers to the market value of all final goods and services produced within a country in a given period. Global FDI has grown faster than world GDP partly as a result of policy changes in recipient countries. Most countries have adopted active FDI attraction strategies through a proliferation of investment promotion agencies at both national and sub-national levels. Foreign investors have the added advantage of long term experience in market functioning, superior business knowledge and technology.

   The market size is a very essential location feature for market-oriented FDI. Buckley et al. argue that capital market imperfections, special ownership advantages and institutional factors mean to explain the geographical outward FDI. Hsiao and Shen argue the two-way relationship between FDI and growth and confirm feedback relationship between FDI and GDP. Herzer et al. argue that there exists neither a long-term nor a short-term effect of FDI on growth; in fact, there is not a single country where a positive unidirectional long-term effect from FDI to GDP is found. Herzer argues that outward FDI has affirmative long-run effects on domestic output.

   (b) Inflation (macro stability) is known to be negatively associated with FDI in the pull factors literature. A negative correlation between interest rate and outward FDI exists given that comparatively low interest rates associated with a country’s capital abundance decreases the opportunity cost of capital and augments the profitability of investments abroad. There is a link of the growth rate of inflation to the interest rate gap. Inflation is a sustained increase in the average price of all goods and services produced in an economy. The ‘real interest rate’ is the rate of interest an investor expects to receive after allowing for inflation. The Fisher equation states that the real interest rate is approximately the nominal interest rate minus the inflation rate. Volatility in inflation represents a risk to both the lender and the borrower. The gap between the real and natural rate of interest does not determine inflation. A negative relationship of ex ante real rates both with inflation and with nominal interest rates appears to exist. Long term inflation appears when the money supply increases at a faster rate than the output of goods and services. The governments of nations demand the central bank to preserve a low, positive rate of inflation.
Nevertheless, when the actual inflation rate differs from the anticipated inflation rate, wealth is redistributed between the parties merely because of the subsistence of inflation.

(c) Predictions about the relationship between FDI and trade critically depend on whether FDI is vertical or horizontal. Theories on horizontal FDI foresee a negative relationship whereas theories on vertical FDI foresee a positive relationship.

Nevertheless, the relationship between trade and FDI is not a straightforward one.

While trade connected with cross-border vertical integration may enhance the outflow of FDI by providing incentives of cost reduction, intra industry trade may inhibit FDI that is seeking economies of scale.

**Empirical Results**

The Table 1 shows the correlation among the variables. Collinearity is a linear relationship between two explanatory variables. Two variables are perfectly collinear if there is an exact linear relationship between the two. Moreover, collinearity - predictors that are highly collinear (linearly related) trigger problems in estimating the regression coefficients.

The correlation between the Global Competitiveness Index 2010–2011 and zekipr1 is 0.7311 and so there is a high collinearity which does not allow regression with both variables. However, the correlation between GCI and zekipr2 is 0.4660 and high collinearity does not exist allowing us to utilize a regression with both variables.

Firstly, the examination of the role of zekipr1, zekipr2 and GCI concerning FDI inflows and outflows is illustrated:

We start our investigation with model 1 using OLS standardized coefficients or beta coefficients and the results (Coef. 1.25***, 1.12**, 0.54, 0.45, 0.73) show that IPRs, expressed by our index, are significant in FDI inflows regarding the long term reference and more significant for FDI stocks (Coef. 1.30***, 1.31***, 1.29***, 1.46***, 1.42**) & FDI on merchandise & services/tertiary sector (Coef. 1.54***, 1.45***, 2.21***, 2.01***). The regressions are based upon data of ten years average, five years average, three years average, two years average and the 2010 respectively (** p<0.01, * p<0.05). The regressions regarding FDI on merchandise and services/tertiary sector are based upon data of ten years average and five years average. In comparison, we continue our investigation with model 3 using OLS standardized coefficients or beta coefficients and the results (Coef. 0.80***, 0.79**, 0.39, 0.74*, 1.02**) show that GCI is significant in FDI inflows regarding not only the long term reference but also the short term reference. While the significance of GCI regarding FDI stocks is similar to the one of IPRs (Coef. 1.03***, 0.84***, 0.81***, 0.88***, 0.85***), the significance of GCI is less important regarding FDI on merchandise & services/tertiary sector (Coef. 0.98***, 0.68*, 0.83*, 0.84*) showing that IPRs are more significant for the specific FDI on merchandise and services/tertiary sector rather than the less considerable role of competitiveness.

We carry on our investigation with model 2 using OLS standardized coefficients or beta coefficients and the results show that IPRs, expressed by zekipr2 index (Coef. 0.92*, 0.77, 0.34, -0.26, 0.09), are less significant than GCI (Coef. 0.64**, 0.70**, 0.35, 0.76*, 1.01**) in FDI inflows & FDI stocks (GCI Coef. 0.91***, 0.72***, 0.70***, 0.79***, 0.77*** --- zekipr2 Coef. 0.74*, 0.96**, 0.95**, 1.06**, 0.98**) and more significant than GCI for FDI on merchandise & services/tertiary sector (GCI Coef. 0.77**, 0.53, 0.55, 0.65 --- zekipr2 Coef. 1.17**, 1.22*, 2.09***, 1.82***) proving the importance of IPRs for the specific type of FDI where the award of IPRs is vital for their existence (Table 2).

Secondly, the examination of the role of zekipr1, zekipr2 and GCI concerning FDI outflows and outflows stocks is presented:

<table>
<thead>
<tr>
<th>zekipr1</th>
<th>zekipr2</th>
<th>gci</th>
<th>trade10yav</th>
<th>inf10yav</th>
<th>1-p10yav</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0000</td>
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<td></td>
<td></td>
<td></td>
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<td>1.0000</td>
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<td>0.6904</td>
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</tr>
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<td>0.4660</td>
<td>1.0000</td>
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<td>-0.0427</td>
<td>0.0034</td>
<td>-0.0977</td>
<td>1.0000</td>
<td></td>
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<tr>
<td>-0.4756</td>
<td>-0.2687</td>
<td>-0.6652</td>
<td>0.1342</td>
<td>1.0000</td>
<td></td>
</tr>
<tr>
<td>0.4091</td>
<td>0.3455</td>
<td>0.6208</td>
<td>-0.2068</td>
<td>-0.3046</td>
<td>1.0000</td>
</tr>
</tbody>
</table>
We persist our investigation with model 1 using OLS standardized coefficients or beta coefficients and the results (Coef. 2.83***, 2.57***, 2.11**, 2.70***, 2.67**) show that \( zekipr1 \) is very significant regarding FDI outflows. \( zekipr1 \) is second in significance after GDP concerning FDI outflows, We keep on our investigation with model 3 using OLS standardized coefficients or beta coefficients and the results (Coef 2.37***, 2.35***, 2.33***, 2.60***, 2.39***) show that \( GCI \) is very significant regarding FDI outflows as well. We go on our investigation with model 2 using OLS standardized coefficients or beta coefficients and the results show a high significance of \( GCI \) (Coef 2.14***, 2.25***, 2.27***, 2.54***, 2.34***) and an insignificance of \( zekipr2 \) (Coef 1.14, 1.53*, 1.65*, 1.86*, 1.62) concerning FDI outflows stocks. In comparison \( zekipr2 \) is more significant regarding FDI outflows stocks rather than FDI outflows but always less significant than \( GCI \) for both FDI outflows and FDI outflows stocks.

We maintain our investigation with model 1 using OLS standardized coefficients or beta coefficients and the results show that \( zekipr1 \) is very significant regarding FDI outflows stocks (Coef. 2.90***, 3.20***, 3.88***, 3.58***, 3.15***). \( zekipr1 \) is second in significance after GDP concerning FDI outflows stocks. We keep on our investigation with model 3 using OLS standardized coefficients or beta coefficients and the results (Coef 2.65***, 2.78**, 2.80**, 2.69**, 2.32***) show that \( GCI \) is very significant regarding FDI outflows stocks as well. We carry on our investigation with model 2 using OLS standardized coefficients or beta coefficients and the results show a high significance of \( GCI \) (Coef 2.47***, 2.62***, 2.63***, 2.55***, 2.22***) and an insignificance of \( zekipr2 \) (Coef 1.14, 1.53*, 1.65*, 1.86*, 1.62) concerning FDI outflows stocks. In comparison \( zekipr2 \) is more significant regarding FDI outflows stocks rather than FDI outflows but always less significant than \( GCI \) for both FDI outflows and FDI outflows stocks.

Legal and economic investigations show that competition law and intellectual property protection are complementary. It has to be taken into consideration that the exact degree of their complimentary role depends not only on the level of competition and IPR but also on the way and accuracy of the evaluation of the index referring either to competition or to IPR.

**Table 2 — OLS model 2 FDI on merchandise & services/ tertiary sector beta coefficients**

<table>
<thead>
<tr>
<th>Variables</th>
<th>(1) logfdiinmers10yav</th>
<th>(2) logfdiinmers5yav</th>
<th>(3) logfdiinter10yav</th>
<th>(4) logfdiinter5yav</th>
</tr>
</thead>
<tbody>
<tr>
<td>( gci )</td>
<td>0.77** (0.226)</td>
<td>0.53 (0.286)</td>
<td>0.55 (0.342)</td>
<td>0.65 (0.327)</td>
</tr>
<tr>
<td>( zekipr2 )</td>
<td>1.17** (0.374)</td>
<td>1.22* (0.469)</td>
<td>2.09*** (0.589)</td>
<td>1.82** (0.586)</td>
</tr>
<tr>
<td>( \text{log}\text{gdp10yav} )</td>
<td>0.56*** (0.054)</td>
<td>0.51*** (0.083)</td>
<td>0.51*** (0.083)</td>
<td>0.51*** (0.083)</td>
</tr>
<tr>
<td>( \text{trade10yav} )</td>
<td>0.00 (0.001)</td>
<td>-0.00 (0.003)</td>
<td>-0.00 (0.003)</td>
<td>-0.00 (0.003)</td>
</tr>
<tr>
<td>( \text{inf10yav} )</td>
<td>0.03 (0.023)</td>
<td>-0.01 (0.037)</td>
<td>-0.01 (0.037)</td>
<td>-0.01 (0.037)</td>
</tr>
<tr>
<td>( \text{log}\text{gdp5yav} )</td>
<td>0.53*** (0.069)</td>
<td>0.50*** (0.079)</td>
<td>0.50*** (0.079)</td>
<td>0.50*** (0.079)</td>
</tr>
<tr>
<td>( \text{trade5yav} )</td>
<td>0.00 (0.002)</td>
<td>-0.00 (0.003)</td>
<td>-0.00 (0.003)</td>
<td>-0.00 (0.003)</td>
</tr>
<tr>
<td>( \text{inf5yav} )</td>
<td>-0.03 (0.035)</td>
<td>-0.00 (0.041)</td>
<td>-0.00 (0.041)</td>
<td>-0.00 (0.041)</td>
</tr>
<tr>
<td>( \text{Constant} )</td>
<td>-13.25*** (1.426)</td>
<td>-11.22*** (1.918)</td>
<td>-14.17*** (2.348)</td>
<td>-13.61*** (2.368)</td>
</tr>
<tr>
<td>Observations</td>
<td>78</td>
<td>76</td>
<td>67</td>
<td>64</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.83</td>
<td>0.75</td>
<td>0.72</td>
<td>0.74</td>
</tr>
<tr>
<td>Adj. R-squared</td>
<td>0.82</td>
<td>0.74</td>
<td>0.70</td>
<td>0.72</td>
</tr>
</tbody>
</table>

Standard errors in parentheses; *** p<0.001, ** p<0.01, * p<0.05

**Conclusion**

Intellectual property, by its very nature and role, is competition-dependent, working appropriately only as a means of competition in competitively structured markets. For that reason, one major concern should be to establish fitting circumstances of competition.
involving operative regional integration. Articles 8.2 and 40 of TRIPS should not be taken as placing restrictions on domestic law, but as invitations to establish an acceptable competition policy. Where the effective functioning of IPRs is weakened by restrictive practices, the market-oriented incentives drop and social costs rise.

Competition laws do not prevent potentially beneficial conduct. Intellectual property has a crucial task in furthering economic progress and the welfare of the world’s people. Intellectual property as a rule is maintained between competition and IPRs. It could be argued that an IPR system is appropriate as long as a balance is maintained between competition and IPRs. Competition rules are not intended to restrain the functioning of the intellectual property system, but rather to preserve its proper functioning.

Intellectual property law and competition law should be placed on the same level since neither of them pre-empt the other with the intention that potential conflicts must be solved by way of concession which takes into account the legitimate interests of both. It could be argued that an IPR system is appropriate as long as a balance is maintained between competition and IPRs. Competition rules are not intended to restrain the functioning of the intellectual property system, but rather to preserve its proper functioning.

The economic analysis utilizing the author’s *zekipr1* index shows a complementarity of IPRs and competitiveness regarding FDI. It is characteristic that the impact of IPRs is higher than that of competitiveness for FDI on merchandise and services and FDI on tertiary sector, where the award of IPRs is vital for this type of FDI. The combination of IPRs and GCI utilizing the *zekipr2* index shows a higher significance of GCI pertaining to FDI inflows and FDI stocks which significance is reversed in favour of IPRs regarding FDI on merchandise and services and FDI on tertiary sector. Moreover, the combination of IPRs and GCI utilizing the *zekipr2* index shows a higher significance of GCI regarding FDI outflows and FDI outflows stocks as well. Thus, the theoretical view of the complementarity of intellectual property rights and competition regarding FDI and accordingly their degree of complementarity is evidenced in this economic investigation.

References
7 Regional economic outlook: Sub-Saharan Africa, International Monetary Fund, 2010.
22 Tool Works Inc v Indep Ink Inc, 126 S Ct 1281, 1284 (2006), ‘[T]he mere fact that a tying product is patented does not support [a market power]’.
23 United States v Microsoft Corp, 253 F.3d 34, 63 (DC Cir, 2001). The antitrust defendant’s claim that it had ‘an absolute and unfettered right to use its intellectual property as it wishes’ was held to be ‘no more correct than the proposition that use of one’s personal property, such as a baseball bat, cannot give rise to tort liability’.

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27 Polygram Holding Inc v FTC, 416 F.3d 29, 35 (DC Cir, 2005).
28 California Dental Assn v FTC, 526 US 1999 at 779.
30 MCI Commc’ns Corp v AT & T, 708 F.2d 1081 (7th Cir, 1983).
49 Merck and Co Inc v Primecrown Ltd (Merck II) [1997] 1 CMLR 83.
54 Nungesser v EC Commission [1983] 1 CMLR 278.