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1. **INTRODUCTION**

This paper sets out our comments to DG Competition’s discussion paper on the application of Article 82 of the Treaty to exclusionary abuses (the “Discussion Paper”, hereinafter). We have focused our comments on the implications that the analytical framework proposed in § 5 and the antitrust rules described in §§ 6 – 10 of the Discussion Paper could have on the development and growth of the high-tech and innovation industries (the so-called “dynamically competitive” industries) in the European Union.

The important contribution of these industries to the European economy has recently been acknowledged by the European Commission in its *i2010 strategy.* The strategy sees growth and employment in the information, communication and technology (ICT) industries as crucial for the achievement of the goals set out in the Lisbon agenda.

It is widely accepted that the growth and development of these industries requires, among other things, a stable regulatory framework that does not penalize successful firms for its own sake and promotes creativity and innovation. According to the Kok Report, prepared in response to an initiative of the European Council, “companies will only invest in innovation and R&D if they have the certainty that they will be able to reap the rewards of that investment.” Because it can affect the return to innovation and investment, competition policy can have a significant impact on the development of the ICT sector and other dynamically competitive industries in Europe. To illustrate this impact, consider a few examples:

*First,* a tight policy regarding excessive prices will have similar effects on the introduction of an upper bound to profits. Given that profits are uncertain *ex ante,* a firm would only be willing to invest if the expected return on its investment exceeds the cost of capital by a

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significant measure. The introduction of an upper bound to prices and hence to profits may thus cause a reduction in investment and a loss of welfare.\textsuperscript{5}

Second, a strict policy in connection with tying and bundling may force a dominant firm that finds it efficient to integrate two previously separated features into a single product to actually produce separate versions of the product: one with both features and two with each feature separately. This may have negative implications for product innovation: the cost of developing products through technological integration grows exponentially with the number of “unbundled” versions mandated by law. As a result, innovation may be artificially stifled and the competitive process unjustifiably thwarted.\textsuperscript{6}

Third, competition policy interventions compelling dominant firms to license their intellectual property may disrupt the innovation process. Economists have shown that (1) compulsory licensing reduces the incentives for the whole industry to innovate in the long run; while (2) it has an ambiguous welfare effect in the short-term. Forced access may increase competition in the short term, but it may also (a) facilitate the entry of inefficient producers; (b) promote licensing arrangements that discourage potential entrants to develop products that are sufficiently different from those of the dominant company, thus reducing product variety in the marketplace; and (c) encourage licensing arrangements that help companies coordinate their respective commercial policies, leading to higher prices.\textsuperscript{7}

The nature and magnitude of the impact of competition policy on investment and innovation in general, and on the ICT in particular, depends crucially on the precise rules applied to the assessment of the business practices of dominant firms.\textsuperscript{8} This is why the


\textsuperscript{7} See, for example, Richard J. Gilbert and Carl Shapiro, “An Economic Analysis of Unilateral Refusals to License Intellectual Property,” \textit{Proceedings of the National Academy of Sciences USA}, 1996.

Discussion Paper is so important. It “sets out possible principles for the Commission’s application of Article 82 of the Treaty to exclusionary abuses”\(^9\) and “presents the analytical approach that could be used by the Commission”\(^10\) in assessing the business practices of firms with market power. Whether the application of Article 82 of the Treaty in the years to come promotes R&D investment and innovation and thus contributes to the achievement of the ambitious goals of the Lisbon agenda will largely depend on the principles and analytic approach finally adopted by DG Competition and the Commission.

The remainder of this paper is structured in five sections. In section 2, we provide an overview of the importance of the ICT sector for the European economy (employment, productivity and growth) and compare its performance with the ICT sectors of the United States and Japan. We conclude that a healthy ICT sector plays a key role for the growth of the economies of the Member States. Europe’s comparatively poor growth and employment record over the last decade can be explained in part by its relatively weak commitment to the development of a strong ICT industry.

In section 3, we briefly review the main economic characteristics of dynamically competitive industries, such as the ICT industry. We focus on those features that have significant implications for the analysis of competition. Subsequent implications are discussed in section 4. Section 5 presents the core contribution of this paper. In this section we evaluate the various statements contained in the Discussion Paper. In doing so, we take into consideration the special characteristics of the dynamically competitive industries and the implications of those characteristics for antitrust law. Section 6 presents a brief conclusion.

2. WHAT’S AT STAKE? INNOVATION AND GROWTH

The ICT sector positively contributes to the growth of the European economy directly, as a result of the growth in the ICT sector itself, and indirectly, by facilitating cost-saving and


\(^{10}\) Id., at § 2.
product innovations in other industries. The rapid pace of ICT innovation also benefits consumers by facilitating access to new and superior products and services.\textsuperscript{11}

The European ICT sector impacts employment directly through its sheer size. Tables 1 and 2 below show the percentage of total employment in the manufacturing and business services industries, respectively, accounted by the ICT sector in the EU and other benchmark countries.

\begin{center}
\textbf{Table 1: Employment in ICT manufacturing (as percent of employment in total manufacturing)}
\end{center}

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{chart.png}
\caption{Employment in ICT manufacturing as percent of total manufacturing employment.}
\end{figure}

Source: Key Indicators on the Competitiveness of EU’s ICT Industry, DG Enterprise, 2005.

\textsuperscript{11} For example, Brynjolfsson et al (2003) found that the increased product variety of online bookstores increased consumer welfare by $731$ million to $1.03$ billion in the year 2000. Brynjolfsoon, E., J.H. Yu, M. Smith, “Consumer Surplus in the Digital Economy: estimating the value of increased product variety at online booksellers”, Management Science, 2003.
Despite recent downturns in ICT activity, the sector continues to expand at rates above overall GDP growth. In 2005, the European ICT sector was worth € 614 billion, and showed overall revenue growth of between 3.8% and 4.7%, compared to overall GDP growth of 1.5% in the European Union. The ICT sector is thought to contribute to 25% of overall growth in the European Union through this direct impact alone. It is also a highly innovative sector, and productivity developments within the sector are believed to account for approximately 40% of productivity growth in the EU.

A number of economic studies suggest the impact of the ICT sector on overall growth is wider than this direct contribution. For example, Basu et al (2003) found that approximately 75% of the overall increase in GDP due to ICT was from its indirect impact on non-ICT sectors. ICT developments can increase productivity across all industries. By way of an

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Table 2: Employment in ICT services (as percent of employment in total business services)

<table>
<thead>
<tr>
<th>Country</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
</tr>
</thead>
<tbody>
<tr>
<td>Japan</td>
<td>1.5</td>
<td>1.5</td>
<td>1.5</td>
</tr>
<tr>
<td>Korea</td>
<td>2.0</td>
<td>2.0</td>
<td>2.0</td>
</tr>
<tr>
<td>Taiwan</td>
<td>2.5</td>
<td>2.5</td>
<td>2.5</td>
</tr>
<tr>
<td>USA</td>
<td>3.0</td>
<td>3.0</td>
<td>3.0</td>
</tr>
<tr>
<td>EU15</td>
<td>4.5</td>
<td>4.5</td>
<td>4.5</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>5.0</td>
<td>5.0</td>
<td>5.0</td>
</tr>
<tr>
<td>Hungary</td>
<td>5.5</td>
<td>5.5</td>
<td>5.5</td>
</tr>
<tr>
<td>Poland</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
</tr>
<tr>
<td>Slovakia</td>
<td>6.5</td>
<td>6.5</td>
<td>6.5</td>
</tr>
</tbody>
</table>

Source: Key Indicators on the Competitiveness of EU’s ICT Industry, DG Enterprise, 2005

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example, consider that it enables businesses to (i) reduce labour costs, (ii) make more informed decisions more quickly, and (iii) reduce transaction costs. Affuso and Waverman (2002)\textsuperscript{15} observe that the ICT sector enables greater labour productivity through ICT capital deepening, i.e. faster growth of intermediate ICT goods and services relative to labour hours. 90% of all capital deepening in the UK has been in ICT since 1994, suggesting this impact is likely to be significant in Europe.

Some more general benefits of ICT innovation on other industries identified in the Spectrum/Indepen report are listed below:\textsuperscript{16}

- Improved business efficiency, e.g. through “just-in-time” manufacturing and better stock management;
- More flexible working practices;
- Better and more efficient availability of information;
- Lower transaction costs;
- Increased management efficiency through more effective communications; and
- More fierce competition due to greater price transparency.

The ICT sector also stimulates dynamic growth in other industries by fostering invention and innovation, for example through its application to modelling and simulation, information search and knowledge sharing.\textsuperscript{17}

A number of empirical studies have attempted to quantify the combined impact of the ICT sector on economic growth. Although these have focused largely on the US and may be biased towards finding a strong relationship,\textsuperscript{18} the empirical link found between ICT and

\begin{itemize}
  \item Luisa Affuso and Len Waverman, \textit{The impact of electronic infrastructure on economic growth and productivity}, a report for the Performance and Innovation Unit, 2002.
  \item See note 14 above.
  \item This is because data for most studies are taken from a boom period, when productivity increases were above the historic trend.
\end{itemize}
growth is nonetheless likely to be indicative of a similar relationship in Europe. Some results include:

- OECD studies of US data (2003) found ICT contributed between 0.4 and 0.5 percentage points to economic growth of 2.5% per annum between 1990-95, and between 0.9 and 1.0 percentage points to overall growth of 4% per annum between 1995 and 2000.\(^\text{19}\)

- Colecchia and Schreyer (2001) found that in the nine OECD countries they studied, ICT contributed between 0.2 and 0.5 percentage points per annum to economic growth over the last two decades, and that this contribution rose to between 0.3 and 0.9 percentage points per annum in the second half of the 1990s.\(^\text{20}\)

- Jorgenson, Ho and Stiroh (2003) found US GDP growth increased by 1.85 percentage points between the periods 1990-1995 and 1995-2000, and found that ICT contributed 0.93 percentage points to this increase.\(^\text{21}\)

- Van Ark, Inklaar and McGuckin (2003) found that faster productivity growth in ICT-intensive industries in the US compared to the EU was the largest single component of the productivity growth differential between the US and the EU. They also found that most European economies showed lower levels of investment in ICT than in the US.\(^\text{22}\)

- Jorgenson (2003) found an increase in IT investment and in productivity growth in IT producing industries after 1995 in all G7 economies, but concluded the contribution of ICT to overall growth tended to be concealed by the decline of other sectors in all countries apart from the US.\(^\text{23}\)

Recent trends and developments in the ICT sector suggest that both its direct and indirect impact on growth in Europe will continue to be strong, and may even grow in significance over the coming years. The most important of these developments is the convergence between computing and communications. This “digital convergence” is creating

\(^{19}\) OECD, *ICT and economic growth – evidence*, August 2003


opportunities for direct growth in the ICT industry through the development of new content services and new applications and functionalities for existing technologies. The European Information Technology Observatory predicts that Western European online content markets alone, which already account for 8% of EU GDP, will triple in size by 2008. Furthermore, ICT is entering a phase of mass deployment: over 80% of enterprises in the EU 15 had Internet access in 2000, a figure which has grown since. This points towards an increasingly significant indirect impact of the ICT sector on EU growth as firms incorporate technologies into working practices and innovate around them. Many ICT technologies also show network effects, generating additional value as the technologies become more diffused. As an increasing number of households and firms take up existing technologies, the indirect impact of these technologies may therefore be amplified.

Europe has a strong presence in the global ICT market, accounting for around one-third of global ICT sales. Europe is particularly strong in nano-electronics, micro-systems and embedded systems, and is a global leader in electronic communications. The European software industry is also steadily expanding. A 1998 OECD study found that between 1987 and 1995, Europe’s IT market approximately doubled from $68 trillion to $138 trillion. Several European companies have also become leaders in their fields. For example, Germany’s SAP is one of the world’s largest software firms, English-based Entrique is a leading developer of voice recognition technologies, and the Finnish company Nokia leads the field of mobile handset manufacturing.

Despite these successful stories, however, Europe lags behind the United States in R&D investment (See Table 3 below) and in the development of the information society.

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24 See note 17 above.
27 OECD figures on growth in overall and private investment in R&D show the major European countries lagging well behind the United States over the last years. OECD, Directorate for Science, Technology and Industry, Main Science and Technology Indicators, 2000, tables 3 and 23.
Table 3: Total R&D Expenditure in % of GDP, Europe, US and Japan

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Belgium</td>
<td>1.80</td>
<td>1.87</td>
<td>1.89</td>
<td>1.96</td>
<td>na</td>
</tr>
<tr>
<td>Denmark</td>
<td>1.89</td>
<td>1.94</td>
<td>2.07</td>
<td>2.06</td>
<td>na</td>
</tr>
<tr>
<td>Germany</td>
<td>2.26</td>
<td>2.29</td>
<td>2.31</td>
<td>2.44</td>
<td>2.48</td>
</tr>
<tr>
<td>Greece</td>
<td>na</td>
<td>0.51</td>
<td>na</td>
<td>0.68</td>
<td>na</td>
</tr>
<tr>
<td>Spain</td>
<td>0.83</td>
<td>0.82</td>
<td>0.89</td>
<td>0.88</td>
<td>0.94</td>
</tr>
<tr>
<td>France</td>
<td>2.30</td>
<td>2.22</td>
<td>2.17</td>
<td>2.19</td>
<td>2.15</td>
</tr>
<tr>
<td>Ireland</td>
<td>1.31</td>
<td>1.28</td>
<td>1.25</td>
<td>1.21</td>
<td>na</td>
</tr>
<tr>
<td>Italy</td>
<td>1.01</td>
<td>1.05</td>
<td>1.07</td>
<td>1.04</td>
<td>na</td>
</tr>
<tr>
<td>Luxembourg</td>
<td>na</td>
<td>na</td>
<td>na</td>
<td>na</td>
<td>na</td>
</tr>
<tr>
<td>Netherlands</td>
<td>2.07</td>
<td>2.03</td>
<td>1.93</td>
<td>2.02</td>
<td>na</td>
</tr>
<tr>
<td>Austria</td>
<td>1.60</td>
<td>1.69</td>
<td>1.81</td>
<td>1.83</td>
<td>1.80</td>
</tr>
<tr>
<td>Portugal</td>
<td>0.60</td>
<td>0.62</td>
<td>0.68</td>
<td>0.75</td>
<td>0.76</td>
</tr>
<tr>
<td>Finland</td>
<td>2.54</td>
<td>2.72</td>
<td>2.89</td>
<td>3.22</td>
<td>3.37</td>
</tr>
<tr>
<td>Sweden</td>
<td>na</td>
<td>3.67</td>
<td>na</td>
<td>3.78</td>
<td>na</td>
</tr>
<tr>
<td>UK</td>
<td>1.88</td>
<td>1.81</td>
<td>1.80</td>
<td>1.88</td>
<td>1.86</td>
</tr>
<tr>
<td>EU-15 (1)</td>
<td>1.87</td>
<td>1.87</td>
<td>1.87</td>
<td>1.93</td>
<td>1.93</td>
</tr>
<tr>
<td>US</td>
<td>2.53</td>
<td>2.56</td>
<td>2.59</td>
<td>2.64</td>
<td>2.69</td>
</tr>
<tr>
<td>Japan</td>
<td>2.77</td>
<td>2.83</td>
<td>2.94</td>
<td>2.94</td>
<td>2.98</td>
</tr>
</tbody>
</table>

Notes: (1) EU-15 does not include Luxembourg. na = Not Available. Data in italics are estimated or provisional.

One of the likely reasons for this investment pattern is the lower protection of intellectual property in Europe.\(^{29}\) The European Commission has repeatedly stated its intention to take action to encourage R&D investment in Europe. These measures involve legal reforms: “Ease of obtaining patents, legal certainty, and appropriate geographic coverage: these are all

essential criteria of the effective protection of innovation in the European Union.” The European Commission has also made it clear that the development and growth of the ICT sector in Europe is one of its key priorities. It is against this factual background that we will assess the impact of the antitrust rules in DG Competition’s Discussion Paper on European R&D and growth.

3. **DYNAMICALLY COMPETITIVE INDUSTRIES: ECONOMIC FEATURES**

These industries differ from traditional industries in a number of ways. In the words of Richard A. Posner (2000):

> The innovative industries … are characterised … by falling average costs (on product, not firm, basis) over a broad range of output, modest capital requirements relative to what is available for new enterprises from the modern capital market, very high rates of innovation, quick and frequent entry and exit, and economies of scale and consumption (also known as “network externalities.”)

The defining feature of these industries is that firms engage in dynamic competition for the market, i.e. in a process of “creative destruction,” whereby drastic innovation makes market leadership highly contestable. Meanwhile, in other industries, competition takes place primarily through standard price competition and, perhaps, also via incremental innovations.

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31 “[T]he Commission proposes three priorities for Europe’s information society and media policies: i) the completion of a Single European Information Space which promotes an open and competitive internal market for information society and media; ii) strengthening Innovation and Investment in ICT research to promote growth and more and better jobs; iii) achieving an Inclusive European Information Society that promotes growth and jobs in a manner that is consistent with sustainable development and that prioritises better public services and quality of life.” See Communication From the Commission to the Council, the European Parliament, the European Economic and Social Committee and The Committee of the Regions, “i2010 – A European Information Society for growth and employment”, [http://europa.eu.int/information_society/eeurope/i2010/docs/communications/com_229_i2010_310505_fv_en.doc](http://europa.eu.int/information_society/eeurope/i2010/docs/communications/com_229_i2010_310505_fv_en.doc).

In what follows, we describe these differentiating factors in greater detail.\textsuperscript{33}

### 3.1. Economies of Scale in Production

Innovative industries tend to have high fixed costs and low marginal costs of production. This is because developing a new, innovative product requires heavy investment, possibly in research and development. However, it may also be because innovative firms often need to invest in a physical or virtual network to create and distribute their products. Once these initial investments are made, the incremental costs of additional units are fairly low, sometimes close to zero. Consequently, these industries exhibit important supply-side economies of scale or “increasing returns.” Successful innovators must charge more than marginal cost, because otherwise they would not be able to be compensated for the high fixed costs and the high risk inherent in the investment. In other words, the rational expectation of significant market power for some period of time is a necessary condition for dynamic competition to exist in high-tech industries. This has a clear-cut implication for market structure: these industries will tend to be concentrated.

This conclusion is not all that new, though, for there are various old-economy industries (such as electricity, gas, steel, etc.) that are also subject to increasing returns. What is really new is that marginal costs are near zero and that increasing returns on the supply side often combine with substantial economies of scale in the demand side, i.e. network effects. These features have important implications for both market structure (concentration) and firm behaviour (pricing). The fact that marginal costs are negligible may also have dramatic consequences. First, the output response to a price increase will likely be large, as incumbents face no capacity constraint. This will tend to make supply-side substitution a much more credible and effective constraint. Also, it has implications for the credibility of predatory pricing claims that are based only on evidence of low prices.

3.2. Network effects

Many innovative industries are characterised by network effects or network externalities. That is, their products are more valuable to consumers when more people make use of them. For instance, an operating system is more valuable to each user the more other consumers use this standard. This is because it makes it easier for consumers to exchange files with each other, and also because more software developers will write applications for this standard. Network effects also constitute a typical feature of many Internet businesses. For instance, the value of a business-to-business (B2B) site for buyers increases with the number of sellers, and similarly the value of the site for sellers increases with the number of buyers.

Network effects have important implications for market structure because dominance by one firm, or at most a few ones, will be the norm. These effects tend to reinforce the position of market leaders. They also have an impact on firms’ conduct, since prices will naturally depend on network size. Firms may initially price their goods low so as to build a larger network. Later, they will raise prices to reap the rents generated by a larger network size. Scale economies in production together with network effects on the demand side will typically result in a single firm with lowest costs and a large share of the market. Consumers will benefit from lower prices and greater standardisation. Breaking up consolidated networks for the sake of market fragmentation would thus reduce consumers’ satisfaction and welfare and, hence, should be considered bad competition policy.

3.3. Durable Goods

Innovative industries often produce durable goods (whose actual durability is a function of technological obsolescence). For instance, nobody acquires a second copy of the same PC game for his/her own consumption. This is because one can enjoy playing the same game

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many times without having to acquire a new copy. Most information goods exhibit the same properties, since information can be used and reused almost without limit. This has substantive implications for pricing strategy as well as for the life cycle of products. Firms selling information goods are bound to compete with their previous sales which encourages them to keep their prices low. This effect is because consumers anticipating low prices in the future (when most of them will have already acquired the good) withhold their current consumption, which forces firms to set lower current prices to boost consumption. This is the so-called “Coase conjecture” (after Ronald Coase, a Nobel-laureate economist). In short, market power may be less of a problem in durable-goods industries, such as those that we consider to be part of the new economy.35

3.4. Dynamic Competition

Competition in innovative industries is dynamic and often consists of a series of races for market dominance. Firms do not compete by slightly undercutting each other. Instead, they engage in what economist Joseph A. Schumpeter described as a “perennial gale of creative destruction” that “strikes not at the margins of the profits of the existing firms but at their foundations and their very lives.”36 In the first race firms invest heavily to develop a product that creates a new category. Winners get huge market shares and enjoy substantial profits. These “prizes” for winners provide the appropriate incentives for investment. Indeed, the return to successful innovators in innovative industries is most often enormous. Winners receive huge profits that offset the huge losses incurred by many losers. In the aggregate, entrepreneurs and investors will invest until the expected rate of return, adjusted for risk, is equal to the opportunity cost of their funds. That is, the expected value of profits ex ante is set at the competitive level. Therefore, the fact that successful firms are very profitable is not an indication that competition is failing.

In subsequent races, firms invest heavily to displace the leader by leapfrogging its technology. Sooner or later competitors seriously contest current leadership in the market. Indeed, leaders are likely to be replaced by their followers unless they invest heavily on various technological fronts. From word processors to spreadsheets, from desktop publishing to personal finance applications, the identity of the leader could not be sustained for a period longer than ten years. The history of high-tech industries has shown that major innovations occur repeatedly, and neither individual switching costs (e.g. learning costs) nor network effects prevent displacement of category leaders by superior products.37

In these industries, competition takes place for the market rather than in the market. Competition in these markets has little to do with undercutting prices at the margin and much more to do with the introduction of drastic innovations, which results in massive transfers of market share. Firms compete by launching new and superior products in a quest for market dominance. In other words, competition comes not from readily available substitutes but from new, innovative products not yet present in the marketplace. However those that succeed are nothing more than “fragile” monopolists, since they can only retain their position if they continue to innovate. As noted by Shapiro and Varian (1999):

…the information economy is populated by temporary, or fragile, monopolies. Hardware and software firms vie for dominance, knowing that today’s leading technology or architecture will, more likely than not, be toppled in short order by an upstart with superior technology.38

The competitive constraint faced by any incumbent stems mostly from forces outside the market rather than from existing competitors. According to Schumpeter:

It is hardly necessary to point out that competition of the kind we now have in mind acts not only when in being but also when it is merely an ever present threat. It disciplines before it attacks. The businessman feels himself to be in a competitive situation even if he is alone in his field or if, although not alone, he


holds a position such that investigating government experts fail to see any effective competition between him and any other firms in the same or a neighbouring field and in consequence conclude that his talk, under examination, about his competitive sorrows is all make-believe.  

3.5. **The role of IP rights**

People must receive a reward for making costly investments with uncertain success. Most inventive efforts fail, even though many of those failures are obviously invisible; we see only a few failures and all of the successes. Society therefore generally allows firms to have market power to reap the rewards of their innovations. It does so by granting property rights over those innovations—i.e., by granting the right to exclude competitors from the results of their innovative efforts. The right to exclude ensures that successful innovators can recover their sunk costs and receive a return that compensates them for the risk. The very high profits of a few successful firms are necessary to compensate investors for the many investment projects that fail. The right to exclude has other important effects on the incentives for innovation. Without it, people would tend to wait for others to incur the costs and risks of innovation and then free ride on the resulting creations. In the extreme case, everyone waits for others to invest and, as a result, investment and innovation cease.

However, these rewards come at a well-known cost. The right to exclude generates high rewards only if its holder can raise price above the competitive level by restricting output below the competitive level. The result is the well known “monopoly-loss triangle,” given by the value that consumers do not get from the output the monopolist does not produce. In a concrete example, one can imagine the value that society loses when pharmaceutical companies charge prices for pills that far exceed of the cost of manufacturing those pills.

When considering whether forcing the disclosure of companies’ trade secrets or compelling them to license valuable IP, policymakers must therefore balance the gains from

39 See note 36 above, page 84.
41 This is a variant of the well-known tragedy of the commons. Garrett Hardin, “The Tragedy of the Commons”, *Science*, 1968.
stimulating short-term competition with the losses from the reduced investment in innovation. They should keep in mind, however, that while the allocative efficiencies that arise in the short term as a result of intervention are relatively easy to measure, the long-term costs of such actions are uncertain and difficult to quantify.\textsuperscript{42} Competition agencies and courts should avoid deciding in favour of short-term allocative efficiency if the only reason is their greater ability to visualize that side of the equation.

3.6. Compatibility and Standardization

In various innovative industries, firms compete by producing and commercialising “systems” or “platforms,” which each comprise two or more components. Whether competition takes place at the platform level or at the components level depends on the degree of compatibility between the various components of different systems. Competition takes place at the components level when the components of different producers are all interoperable. Otherwise, when components are incompatible across platforms, competition takes place at the system level.

Compatibility is often an endogenous variable: a firm may design its products to be compatible with its competitors’ products by, for example, building and selling suitable interfaces. This may be the optimal strategy for an entrant who wishes to induce consumer switching to its new platform. And it may also be the optimal strategy of an entrant with a superior new component who aims at selling that component to the users of incumbent

\textsuperscript{42} See Geradin, Damien, “Limiting the Scope of Article 82 of the EC Treaty: What can the EU Learn from the US Supreme Court's Judgment in \textit{Trinko} in the wake of Microsoft, IMS, and Deutsche Telekom”, \textit{Common Market Law Review}, December 2005, at 1540 (“Despite the largely documented importance of “dynamic efficiency”, the Commission and the European Court of Justice have traditionally focused on the increased “allocative efficiency”, which would be gained by stimulating competition between the access “giver” and the access seeker(s) in downstream markets. … [E]x post allocative efficiency gains are generally easier to measure than ex ante ones. As far as ex post gains are concerned, mandating access to an essential facility will often lead to significant results identifiable in the short-term, such as increased competition in the downstream market, falling prices, and improved quality of service. Yet, though less apparent, the harm created by mandatory access on ex ante incentives can be very serious. In this regard, the right question is not to ask whether mandatory access will ruin the business prospects of the bottleneck holder, but whether such access will reduce, or even eliminate, the incentives this firm, as well as any other firm, to invest in facilities (physical infrastructures, new processes, etc.), which will likely be subject to compulsory sharing.”).
platforms. In sum, whether competition takes place at the system or component level depends on firms’ commercial strategies as much as on purely technological considerations. At the platform level, the value of one component depends on the complementary components in the system. Firms in high-technology industries have strong incentives to encourage production of high-quality complements. This is true whether these other components are produced in-house or, alternatively, are developed and manufactured by other firms.

Compatibility requirements make standards necessary. The object of standardization is to prevent the failure of a system’s performance because of degradation. These standards may be *de jure* standards, which are formally set either by governments or by standard-setting agencies or, alternatively, *de facto* standards, which arise because one technology becomes the most popular choice in the marketplace. There may be more than one standard at a time, although this is less likely when standards emerge from the market and there are strong network externalities. In the last case, investors will fiercely compete to make their technologies the *de facto* standard. This competitive race to become the next standard is just another form of Schumpeterian competition.

### 3.7. Technological Convergence

Technological convergence is perhaps one of the most striking phenomena in the new economy. We can identify two different kinds of convergence: (a) convergence in substitutes and (b) convergence in complements.43 Two products converge as substitutes when consumers consider either interchangeable with the other. This happens when (i) an increasing number of customers are willing to use them as substitutes in an increasing number of tasks and/or (ii) an increasing number of customers might begin to think of those products as substitutes in a given number of tasks. For example, during the 1960s to 1980s, IBM dominated the business computer market with its mainframes System/360 and System/370. Technical developments led to the opening of new market segments, such as the minicomputer segment. Mainframe and minicomputer users did not perceive them as substitutes mainly because or their very

different technical characteristics. The minicomputer evolved into the super-minicomputer, whose main advantages were convenience, capacity, reliability and low cost for small applications. The super-minicomputer was mainly directed to small administrative users that could not afford an expensive mainframe but who needed reliable software and support services, which minicomputer companies did not offer. After an initial period of innovation, super minicomputers began to be adopted for simple administrative tasks and competed at the margin with mainframes (i.e., a number of consumers considered them substitutes). Technical convergence led to an entirely new market definition that now includes both mainframes and (new, improved, super) minicomputers.

Two products converge as complements when they work better together than separately or when they work better together than they worked together formerly. Two ways in which this can take place are: (i) a given set of users finds that two products work better together for a large set of tasks and/or (ii) an increasing number of users finds that two products are complementary for their specific purposes. An interesting example of convergence in complements is currently taking place in the so-called business-to-business (B2B) software infrastructure market which embraces the following software needs that were initially produced by separate companies with no virtual links: (a) the procurement window (i.e. the first screen that the buyer sees when initiating a request); (b) the workflow technology that allows buyers to specify procurement rules (i.e. how orders get routed for approvals); (c) the content manager or the technology that allows buyers to load and view suppliers updated catalogues; (d) trading applications or the technology for dynamic pricing, bidding and auctioning; and (e) the back-office or more traditional enterprise resource planning (ERP) systems. As a result of this process of convergence, various separate companies, previously selling disparate products, belong now to an integrated market (their products are now seen as complements).

4. **Implications for the Design of Antitrust Rules**

There is a wide consensus among practitioners and scholars, lawyers and economists about the following four propositions concerning the design of socially desirable antitrust rules in dynamically competitive industries:
First, competition policy rules operate more as a system of deterrence than a system of regulation. Antitrust rules should be designed so that they deter conduct that is anticompetitive and welfare reducing without discouraging pro-competitive, welfare-enhancing competition.44 Distinguishing pro-competitive from anticompetitive actions with certainty is impossible. Socially desirable antitrust rules should minimise the expected cost of error, promoting welfare-enhancing behaviour and deterring anticompetitive actions, while maintaining a degree of predictability for businesses (legal certainty) and administrative ease for courts (administrability).45

Second, while there is no reason to exclude dynamically competitive industries from the reach of the antitrust laws,46 competition policy analysis should be tailored to the special characteristics of these industries. One size does not fit all. In particular, the rules applied to the assessment of competition in high tech sectors need to be adapted to reflect the dynamic nature of competition and the key role of innovation in these industries.47

Third, the peculiarities of these industries make the competitive assessment of unilateral business practices a daunting task, one for which enforcement agencies and courts may not be properly endowed.48 The expected cost of errors resulting from condoning harmful practices or condemning beneficial ones is therefore likely to be very high in dynamically competitive industries:

44 Evans and Schamlensee, note 33 above, page 46.


48 Posner, note 32 above.
Applying competition law in new economy cases is very difficult. The judgements that have to be made are often fine ones - allowing an operation to go through could close a new market completely, whilst prohibiting or imposing conditions on another could stifle innovation and prevent technical progress.49

As an illustration, consider the difficulties typically encountered when defining markets in dynamically competitive industries. Traditional market definition exercises focus on demand-side substitutability. This may lead to incorrect market definitions in dynamically competitive industries where competition does not come from readily available demand substitutes, but from new products, whose time of introduction is most often uncertain. As noted by Evans and Schmalensee (2002), these firms:

…are not constrained much by the pricing or production decisions of existing firms, because they typically face few if any contemporaneous rivals, and scale economies and network effects are often effective barriers to the entry of comparable…products.50

Defining relevant markets in these industries not only presents potentially severe conceptual problems, it also involves various analytical difficulties. Most indicia typically used by competition authorities to define relevant markets (SSNIP test, the physical characteristics of product and intended use, the product prices, and consumer preferences or cross-elasticity of demand) have limited value in high-technology industries. For instance, subdividing the relevant market based on the different physical characteristics of products may lead to overly narrow markets, given the prominent role played by product differentiation in these industries.51

Given these problems, market definition should perhaps play a less significant role in the competitive assessment of unilateral behaviour in dynamically competitive industries. Market shares should not be blindly used as relevant indicators of market power in those industries, and supply-side constraints should be carefully considered at the assessment stage.

49 Pons, note 47 above, at page 4.
50 Evans and Schmalensee, note 33 above.
Fourth, the cost of prohibiting efficient practices tends to outweigh the cost of permitting anticompetitive practices.\textsuperscript{52} This is especially true in innovative industries, where (a) market power tends to be fragile and hence the cost of false acquittals is small, and (b) the cost of a false conviction, which is given by the loss of consumer welfare resulting from the introduction of valuable new goods and technologies for which there is potential demand, is likely to be large and larger than the cost of a false acquittal.

This last proposition merits a more detailed explanation.\textsuperscript{53} The cost of a Type I error is given by a reduction in the incentives to invest and innovate. Evidence of false convictions is bound to reduce the incentives to invest and innovate by reducing the expected rate of return on successful innovations. In welfare terms, the cost of a Type I error is equal to the loss in welfare resulting from the lack of introduction of valuable new technologies, products and services (area A + B in Figure 1 below). This has to be compared with the cost of a false acquittal or Type II error, which in general terms is given by the loss in consumer welfare that results from supra-competitive prices (area B + C in Figure 1).

\textbf{Figure 1. The cost of Type I and Type II errors}

![Figure 1](image)

From Ahlborn, Evans and Padilla (2005) it is possible to conclude that in general, unless the behaviour of the dominant firm prevents the emergence of new products with high

\textsuperscript{52} Evans and Padilla, note 45 above.

probability, the cost of Type I error is greater than the cost of a Type II error in innovative industries.\footnote{Id., at page 1142, Proposition 3.}

5. \textbf{ASSESSING DG COMPETITION’S DISCUSSION PAPER}

In the last two sections we have shown that special attention should be given to the particular characteristics of innovative industries, such as the ICT industries, when designing rules for the antitrust assessment of unilateral practices. Most importantly, those rules should avoid chilling innovation. This may require (a) limiting intervention to circumstances where the pro-competitive effects of intervention are large (because, for example, the exclusionary effects of a given practice risk eliminating all competition and prevent the emergence of new products or markets), and the disincentive effects of intervention are small and non-existent;\footnote{Id., at page 1111.} and (b) allocating the burden of proof as regards the balancing of the pro-competitive and anti-competitive effects of a practice to the plaintiff or the enforcement agency.\footnote{Evans and Padilla, note 45 above.}

In this section we review critically the Discussion Paper published by DG Competition in 2005 and now subject to public consultation. This Paper is meant to lay out “possible principles for the Commission’s application of Article 82 of the Treaty to exclusionary abuses”\footnote{Discussion Paper, at § 1.} and describe “the analytical approach that could be used by the Commission”\footnote{Id., at § 2.} in assessing unilateral business practices. Whereas the Discussion Paper’s emphasis on effects constitutes a step in the right direction, we conclude that the principles set out in §§ 6 – 10 and the analytical approach presented in § 5 of the Paper are not adequate for the competitive assessment of unilateral behaviour in dynamically competitive industries. This conclusion is based on the following arguments:

\footnotesize
\begin{itemize}
  \item \footnote{Id., at page 1142, Proposition 3.}
  \item \footnote{Id., at page 1111.}
  \item \footnote{Evans and Padilla, note 45 above.}
  \item \footnote{Discussion Paper, at § 1.}
  \item \footnote{Id., at § 2.}
\end{itemize}
5.1. Market definition

The Discussion Paper states in § 12 that

The main purpose of market definition is to identify in a systematic way the immediate competitive constraints faced by an undertaking. The objective of defining a market … is to identify all actual competitors … (Emphasis added.)

By focusing on “immediate” competitive constraints and “actual” competitors, the Discussion Paper fails to recognize that product innovation and potential competition play a key role in dynamic, innovative industries. The main constraint faced by companies operating in those industries comes from new, superior products whose time of introduction is highly uncertain. The implication of ignoring potential competition in dynamically competitive industries is that markets will be defined too narrowly, which in turn will lead to frequent, though mostly unjustified, findings of dominance in innovative industries.

§§ 13 to 19 in the Discussion Paper concern the so-called “cellophane fallacy.” The Discussion Paper concludes that in Article 82 cases “any single method of market definition, including in particular the SSNIP-test, is likely to be inadequate.” It then goes on to suggest the need “to examine the characteristics and intended use of the products concerned and to assess whether they are capable of satisfying an inelastic consumer need.” While it is fair to say that the mechanic application of the SSNIP test in Article 82 cases may lead to overly broad market definitions, it is also true that an approach to market definition that is based on product characteristics only tends to cause excessively narrow market definitions, especially in high-tech industries where products are often highly differentiated even when they may be perceived as demand-side substitutes by consumers. This is problematic for several reasons. First, narrow markets often lead to incorrect findings of dominance. Second, if the framework of analysis proposed in the Discussion Paper is adopted, a dominant company with a market share that exceeds 75% may find it very difficult to defend its behaviour by reference to its efficiency effects. (See § 92 of the Discussion Paper.)

5.2. Dominance

The Discussion Paper helpfully states in §§ 23-24 that:
For dominance to exist the undertakings concerned must not be subject to effective competitive constraints. In other words, they must have substantial market power.

Market power is the power to influence market prices, output, innovation, the variety or quality of goods and services, or other parameters of competition on the market for a significant period of time. (Emphasis added.)

However, § 31 is not very helpful. While it states that “very high market shares” indicate a dominant position, this would be the case “where an undertaking holds 50% or more of the market, provided that rivals hold a much smaller share of the market” and that “dominance is more likely to be found in the market share range of 40% to 50% than below 40%”, it also states that “undertakings with market shares below 40% could be considered in a dominant position.” Moreover, surprisingly, it does not totally exclude the fact that even firms with market shares lower than 25% could be found dominant.

Given the very significant consequences resulting from a finding of dominance on, for instance, the ability of a firm to set its prices, tie its products, etc., it would be much preferable if the Commission were to come up with a clear threshold (e.g., 40%) below which no firm would be found dominant. This market share threshold approach has already been applied by the Commission in block exemption regulations and could again helpfully be applied with respect to the assessment of dominance.

Equating high market shares with dominance in dynamic industries is particularly problematic. These industries are typically populated by monopolists or oligopolists. This is because competition is often a matter of “winner takes most.” These high market shares are often not a good proxy for market power since in these industries the incumbents are, with very rare exceptions, under the permanent threat of entry and are only able to retain their position of leadership if they continue to innovate. An example of this is the electronic games industry,


60 See section 3.4 above.
where Sega’s leadership was successfully challenged by Nintendo first and then by Sony, and where there is now a fierce battle between Sony’s PlayStation and Microsoft’s Xbox.\textsuperscript{61}

The implications of an incorrect finding of dominance are not trivial. The “special responsibility” imposed by EC competition law on dominant firms may result in the prohibition of welfare-enhancing actions if they hurt competitors’ profits.\textsuperscript{62} Additionally, it may prevent companies with high market shares but which are under the threat of entry from competing vigorously on a level playing field with their current and future competitors.

5.3. Analytical framework

Section 5 of the Discussion Paper presents “the framework that could be used by the Commission in its analysis of exclusionary abuses”. (§ 51.) This framework involves two steps: (1) the analysis of likely foreclosure (§§ 54 - 76) and (2) the assessment of possible objective justifications and efficiency defences (§§ 77 - 92).

The central concern and proof of foreclosure

§ 54 states that

The essential objective of Article 82 when analysing exclusionary conduct is the protection of competition on the market as a means to enhancing consumer welfare and of ensuring an efficient allocation of resources.

The emphasis on the “protection of competition on the market” reflects the traditional German ordo-liberal view that competitive rivalry should be protected as such.\textsuperscript{63} The Discussion Paper also emphasises consumer welfare, which is traditionally served by low prices, quality and innovation. However, the Discussion Paper appears to establish an exclusive link between consumer welfare and the efficient allocation of resources (i.e. with low prices), which ignores the prominent role played by dynamic efficiency on the well-being of


\textsuperscript{63} David Gerber, Law and Competition in Twentieth Century Europe: Protecting Prometheus, Oxford University Press, 1998.
consumers. Consumer welfare is not only influenced by the relative efficiency with which the scarce resources of an economy are allocated; it is also positively affected by the emergence of new products, technologies and services. This undue emphasis on allocative efficiency is particularly problematic in dynamically competitive industries. In such industries, price competition is not the main form of competition. Firms compete by launching new products and developing new technologies. Having numerous firms with no market power, and hence low prices, is not necessarily ideal.

In § 55, the Discussion Paper states:

Article 82 prohibits exclusionary conduct which produces actual or likely anticompetitive effects in the market and which can harm consumers in a direct or indirect way.

While the Commission’s emphasis on the “effects” of a given conduct is helpful, the above statement is excessively broad and could catch unilateral conduct by dominant firms with only remote effects on the conditions of competition in the market. If the Commission wants to maintain that language, it should at least be:

- requested to show that such effects are “appreciable” (as in the case of Article 81(1) of the EC Treaty).

- held by the standard of evidence imposed by the European Court of Justice (ECJ) and the Court of First Instance (CFI) in the area of mergers where the Community courts have required the Commission to demonstrate “convincing evidence” of harm. There is indeed no reason why the Commission or other enforcement agencies should be held to lower standards of proof than in the case of mergers.

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64 They are indications in the Community Courts case law that Article 82 is concerned with abusive conduct that reaches a sufficient level of appreciability. For example, the ECJ in Compagnie Maritime Belge held that “An abuse may occur if an undertaking in a dominant position strengthens that position in such a way that the degree of dominance reach substantially fetters competition.” (Emphasis added.) See Joined cases C-395/96 P and C-396/96 P Compagnie Maritime Belge Transports SA, Compagnie Maritime Belge SA and Dafra-Lines A7S v Commission [2000] ECR I-1365.

The identification of an abuse should rely on a proper theory of harm sustained by proper evidence. An excessively broad or abstract interpretation of the notion of anti-competitive effects in specific cases could lead to the prohibition of conduct beneficial to consumer welfare.

The Discussion Paper states in § 58:

Foreclosure thus can be found even if the foreclosed rivals are not forced to exit the market: it is sufficient that the rivals are disadvantaged and consequently led to compete less aggressively … Foreclosure is said to be market distorting if it likely hinders the maintenance of the degree of competition still existing in the market or the growth of that competition and thus have as a likely effect that prices will increase or remain at the supra-competitive level.

This notion of foreclosure is excessively broad. Competitors may be foreclosed, according to the definition in the Discussion Paper, even if they are not forced to exit or cornered into a market niche. All that the Commission will have to show under this standard is that the actions of the dominant firm constrained the growth of its competitors by placing them at a competitive disadvantage.\footnote{In 	extit{Michelin II}, The CFI upheld the Commission’s conclusion that the declining market share of Michelin did not constitute proof of lack of effect. The Commission argued and the Court admitted that competitors would have done better had Michelin behaved differently. (See Case T-203/01 	extit{Michelin v Commission} [2003] ECR II-4071. This is impossible to rebut. See also Case T-219/99 	extit{British Airways plc v Commission} (17 December 2003) not yet reported.} This makes any claim of market foreclosure very hard, if not impossible, to rebut. If foreclosure means exit, then showing no exit is a rebuttal. If it means marginalisation, then showing that rivals are experiencing growth is a rebuttal. However, if foreclosure means a reduction in the rate of growth of competitors, there is no possible rebuttal, since there is no counterfactual available (what would be the rate of growth of competitors absent the alleged abuse?).

This is particularly troublesome in dynamic industries, where firms compete \textit{for} the market. Competitors in these industries invest vast amounts of money to develop new products with which they expect to win a large share of the market. Some of them succeed while many others fail. There is no sustainable market equilibrium with many, small players co-existing peacefully in the market. Rather there are successive innovation races with winners and losers.
The success of the former goes hand in hand with the decline of the latter. This “perennial gale of creative destruction”, in the words of Joseph Schumpeter, may be obstructed inefficiently by a policy that, under the excuse of protecting the competitive process, is seeking to obtain (or preserve) a fragmented market structure. 67

Possible defences: Objective justifications and efficiencies

The second step in the analytical framework proposed in the Discussion Paper requires considering possible objective justifications and/or efficiency defences. § 77 states that Exclusionary conduct may escape the prohibition of Article 82 in case the dominant undertaking can provide an objective justification for its behaviour or it can demonstrate that its conduct produces efficiencies which outweigh the negative effect on competition.

§ 84 states that for this “efficiency defence” to be admitted the dominant company must demonstrate that the following conditions are fulfilled: (i) that efficiencies are realised or likely to be realised as a result of the conduct concerned; (ii) that the conduct concerned is indispensable to realise these efficiencies; (iii) that the efficiencies benefit consumers; (iv) that competition in respect of a substantial part of the products concerned is not eliminated.

While the Commission’s acceptance of an efficiency defence is a step forward, the conditions that are imposed on dominant firms for relying on such defence are very strict and it is not clear how often such firms will be able to demonstrate them in practice. Even though such conditions are imposed by Article 81(3) the Treaty with respect to agreement between firms susceptible to restrict competition, there is no textual basis for imposing such conditions (and the resulting shift in the burden of proof) in the context of Article 82. If the Commission wants to impose such conditions to ensure a degree of coherence between Articles 81 and 82, it should then be encouraged to apply the same screening tests as it applies in Article 81 including the market share thresholds found in the new block exemption regulations (which could be ensured by setting a threshold below which no finding of dominance could be established) and the requirement of “appreciable effects” stemming from the case-law of the ECJ.

67 See section 3.4 above.
§ 91 states *inter alia*:

Ultimately the protection of rivalry and the competitive process is given priority over possible pro-competitive efficiency gains. […] It is therefore, also when assessing the no-elimination-of competition requirement, highly unlikely that abusive conduct of a dominant company with a market position approaching that of a monopoly, or with a similar level of market power, could be justified on the ground that efficiency gains would be sufficient to counteract its actual or likely anti-competitive effects.

The absolute priority given to the protection of rivalry over possible pro-competitive efficiency gains could lead to the maintenance of inefficient market structures. This is especially problematic in dynamically competitive industries, where the elimination of competition may not only be inherent to the competitive process, but is also generally unstable and temporary, and where dynamic efficiency matters more than allocative efficiency.

Note finally that in the Discussion Paper the burden of proof in connection with the balancing of pro-competitive and anticompetitive effects rests on the defendant. This is in contrast with the way these analyses are conducted in the United States. A rule of reason approach in the United States generally consists of four steps:

First, to be condemned as exclusionary, a monopolist’s act must have an ‘anticompetitive effect.’ That is, it must harm the competitive process and thereby harm consumers. In contrast, harm to one or more competitors will not suffice. Second, the plaintiff, on whom the burden of proof of course rests, must demonstrate that the monopolist’s conduct indeed has the requisite anticompetitive effect. Third, if a plaintiff successfully establishes a prima facie case … by demonstrating anticompetitive effect, then the monopolist may proffer a ‘pro-competitive justification’ for its conduct. If the monopolist asserts a pro-competitive justification—a non-pretextual claim that its conduct is indeed a form of competition on the merits because it involves, for example, greater efficiency or enhanced consumer appeal—then the burden shifts back to the plaintiff to rebut that claim. Fourth, if the monopolist’s pro-competitive justification stands unrebutted, then the plaintiff must demonstrate that the anticompetitive harm of the conduct outweighs the pro-competitive benefit.68

The allocation of the burden of proof is likely to have a determinant role in Article 82 cases concerning dynamically competitive industries. In such industries, while the

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anticompetitive effects of a given practice, if any, may be easy to measure, its pro-competitive
effects, while certainly important, will be difficult to measure with precision. Thus, the
balancing test will be hard to make and the party with the burden of proof is likely to lose the
case.°9 Fortunately, the allocation of the burden of proof can be made by reference to objective
criteria in this type of industries at least. As explained earlier, given the expected costs of a
false conviction in these industries, it is preferable to allocate the burden of proof to the
plaintiff.°0

5.4. Predation

The Discussion Paper adopts a modified version of the AKZO test.°1 In AKZO, the
ECJ uses a two-pronged test to identify predatory behaviour. In a nutshell, prices below
average variable cost are presumed predatory, while prices above average variable cost but
below average total cost are only found to be predatory if there is evidence of intent. The
Discussion Paper replaces the average variable cost benchmark with an average avoidable cost
benchmark (§ 108). Also, it distinguishes between direct and indirect evidence of intent, and
states that if the evidence of intent is indirect and predation is not the only plausible explanation
for the behaviour of the dominant company then,

... it is at least necessary to show that a foreclosure effect is likely in view of the
scale, duration and continuity of the low pricing before predatory pricing can be
found to exist. (§ 84.)

The changes introduced with respect to the AKZO test are justified. However, we
would like to see a stricter standard of proof with respect to the likelihood of a foreclosure
effect, especially in innovative industries. As explained above, when competition is for the
market, one firm’s gain is another loss and, consequently, distinguishing predation from normal
competition is difficult. Every successful firm intends for its competitors to leave the market

°9 See Geradin, supra note 42, at 1542.
°0 Evans and Padilla, note 45 above.
after its new product innovation. This questions the value of any direct evidence of exclusion.  

Concerning “recoupment,” the Discussion paper states the well known proposition that the Commission does therefore not consider it is necessary to provide further separate proof of recoupment in order to find an abuse. (§ 122.)

The Discussion Paper argues that recoupment follows necessarily from dominance. As dominance is already established this normally means that entry barriers are sufficiently high to presume the possibility to recoup. (§ 122.)

However, in innovative industries, dominance may not be enough to establish the possibility of recoupment. In dynamic industries where market power is unstable, there is little or no certainty about recoupment. Therefore: (i) predatory pricing is a particularly unlikely strategy (because it is risky), and (ii) evidence of recoupment is important and goes beyond the traditional analysis of dominance, with its emphasis on current market shares and price competition.

In a typical case, a firm is found to be dominant if it can act independently of its competitors and customers for a sustained period of time, either one or two years. In many industries, especially in emerging markets for new technologies where there is significant cost and demand uncertainty as well as uncertainty about potential entry, looking forward one or two years may not be enough. Furthermore, a proper assessment of recoupment in these industries requires investigating not only the position of the alleged dominant company in today’s marketplace, but also the various research avenues undertaken by the dominant firm and its competitors in the mid and long term. This is because a firm may be dominant in the sale and distribution of a new product and yet be constrained by entrants with highly disruptive technologies (which require time to mature and successfully commercialise).

Finally, the Discussion Paper contemplates and admits the possibility of above-cost predation:

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72 Ahlborn, Evans and Padilla, note 33 above.
Where it thus can be established that the price, also after the price cuts remains above average total cost the pricing will not be assessed as predatory, unless exceptional circumstances indicate that such price cuts have led or will lead to substantial harm to consumers. (§ 127.)

For example:

…where a single dominant company operates in a market where it has certain non-replicable advantages or where economies of scale are very important and entrants will have to operate for an initial period at a significant disadvantage because entry can practically only take place below the minimum efficient scale. In such a situation the dominant company could prevent entry or eliminate entrants by pricing temporarily below the average cost of the entrant while staying above its own average total cost. (§ 129.)

This is highly controversial. First, while economic theory has established that in some cases, pricing above cost may be predatory and cause consumer harm, there is a broad consensus among competition policy experts that any attempt to identify and sanction above-cost predation is likely to lead to too many false convictions, chill competition, and hurt consumers. Second, a policy against above-cost predation leaves no safe havens in connection with pricing abuses. Third, the exceptional circumstances identified in § 129 are typically met in many innovative and network industries. A literal interpretation of this paragraph suggests that a dominant company operating in one of these industries may be compelled to charge prices that are inefficiently high in order to facilitate the entry of would-be efficient competitors. This rule poses a number of difficulties: (a) How will the incumbent

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74 See Einer Elhauge, “Why Above-Cost Price Cuts To Drive Out Entrants Are Not Predatory—and the Implications for Defining Costs and Market Power” Yale Law Journal, 2003. Professor Elhauge explains that any restrictions on above-cost prices “will not have any benefit outside the limited case where less efficient entrants face entry costs that are not so low that they would have entered without a restriction and not so high that they cannot recoup with short-run entry, but are in that intermediate range where the marginal prolongation of short-run profits encourages them to engage in hit-and-run short-term entry and exit against an incumbent who was really exercising pre-entry market power. And even in that case, the net effects are mixed without considering implementation difficulties, and become worse when we do. Further, the restrictions will have clear adverse effects for cases involving any other sort of entrant and also discourage investment and innovation in creating more efficient firms.”

75 “Ronald [Coase] said he had gotten tired of antitrust because when the prices went up the judges said it was monopoly, when the prices went down thy said it was predatory pricing, and when they stayed the same it was tacit collusion.” Edmund W. Kitch, “The Fire of Truth: A Remembrance of Law and Economics at Chicago: 1932 - 1970,” Journal of Law and Economics, 1981, page 193.
know what the costs of the potential entrant are? (b) If there are entrants with different degrees of efficiency, which one should be considered for the application of the rule? (c) If the potential entrant has a superior technology or product, is the incumbent allowed to compete by cutting prices below the entrant’s costs?

Admittedly, the Discussion Paper restricts intervention in above-cost predation cases to situations where (a) there is evidence of a clear strategy to exclude, and (b) the entrant is less efficient simply because of the existence of non-replicable advantages. However, these restrictions are unlikely to be binding in dynamic markets. First, as we saw above, in these markets, where competition takes the form of races for the market, all successful firms intend for their competitors to fail. Second, most IP holders possess assets that may confer upon them a competitive advantage (patents, copyrights, etc), but which are legitimately derived.

5.5. Rebates

The Discussion Paper proposes a new framework for the competitive assessment of loyalty discounts under Article 82 EC. It distinguishes between conditional discounts (i.e., schemes where the price charged is linked to a customer condition (e.g., meeting a sales threshold)) and unconditional discounts (i.e., a straightforward price reduction with no conditions attached). (§ 171.) The Discussion Paper recognises that both types of discounts may be used for efficiency reasons or for anticompetitive motives, and both may have pro-competitive and anticompetitive effects.

Regarding unconditional discounts, the Discussion Paper proposes to apply the usual rules on predatory pricing. (§ 151.) Concerning the treatment of conditional rebates, the Discussion Paper crucially distinguishes between conditional rebates granted on all purchases in the reference period (one year or more) and conditional rebates on incremental purchases above a given threshold. (§ 151.) While both types of conditional rebates may cause exclusionary effects, the Discussion Paper takes the (incorrect) view that the former are less likely to be objectively justified. (§ 174.)

When the discount only applies to the incremental purchases, the Commission will find an abuse only of the price for those incremental purchases is below the dominant firm’s
average total cost (ATC) and the part of demand covered by the rebate is sufficiently large to foreclose the market. (§ 168.) The Discussion Paper thus employs a predation standard for incremental rebates. There is a non-trivial difference, however; the cost threshold proposed for the assessment of predatory pricing is the average avoidable cost (AAC), whereas the cost threshold to be applied in the assessment of these rebates is the average total cost (ATC). The Discussion Paper justifies the departure from the AAC benchmark in that the use of conditional rebates for exclusionary practices entails no financial or business sacrifice, unlike in normal predation cases. This argument does not seem persuasive, and it is particularly risky in innovative industries. Since it is perfectly rational for a company to adopt a discount policy that implies net prices above AAC and ATC, the Commission should not infer that the dominant firm intends to eliminate competitors when it observes discounts that result in net prices situated within this range. The Commission should adopt the same benchmarks it applies to predatory pricing, i.e., AAC only.

The choice of cost benchmark is of particular importance in industries with high fixed costs and low marginal costs and where many fixed costs are common to various line of production or research. For these industries, an ATC benchmark is significantly more restrictive than an AAC benchmark.

The Discussion paper suggests the following five-step methodology for the assessment of discounts conditional on all purchases made within a reference period:

1. For each customer, determine the relative sizes of the “non-contestable” and “contestable” portions of demand. If entrants can contest all of the demand of a given customer, then there is no risk of foreclosure.

2. For each customer, given the discount scheme employed by the dominant firm, calculate the minimum size of the contestable amount for which the net price of the additional units equals the cost of production. This is denoted in the Discussion Paper as the “required share.” (§ 155.)

3. Compare the required share with the production capacity that each of the competitors of the dominant firm can deploy to compete for that customer. If
the latter (denoted as the “commercially viable share”) exceeds the required share, then there is no risk of foreclosure, and vice versa. (§§ 156 and 157.)

4. Investigate whether the dominant company applies the rebate scheme to a substantial part of the market. If not, then there is no market foreclosure even if a few customers may be captured. (§ 162.)

5. Consider whether any of the following aggravating factors are present in the case at hand: (a) the conditional rebate is *de facto* individualised (as opposed to standardised), i.e., tailored to each customer; (§§ 158 and 159) (b) customers are uncertain about the target threshold or the level of the rebate; (§ 160) (c) the reference period is not short; (§ 161) and (d) there is evidence of material foreclosure. (§ 162.)

On the basis of this analysis, the Commission may conclude that the rebate system is likely to result in market foreclosure and thus an abuse of dominance. This presumption may be rebutted by showing either that foreclosure is unlikely or that entry has occurred. The dominant firm may also try to justify objectively the rebate scheme. This methodology is extremely complex to implement in practice. Several difficulties arise. First, it is usually very difficult to assess the contestable and non-contestable portions of demand for each and every customer. Second, the calculation of the required share on a customer by customer basis is laborious. Third, it is unclear whether and how the required shares of each of the customers of the dominant firm should be aggregated to compare the commercially viable share of the competitors of the dominant firm. Finally, the calculation of the so-called commercially viable share is not fully specified in the Discussion Paper, and it seems totally impossible in dynamically competitive industries.

Given all these difficulties, and the consequent lack of legal certainty, dominant firms wishing to comply with Article 82 EC may decide not to make use of conditional rebate schemes, even where they enhance consumer welfare. This is again particularly troublesome in innovative industries and, in particular, for pure play innovation companies (i.e., for companies who engage in R&D but do not produce or distribute the products that result from their
innovations). These companies need (a) to find ways to provide appropriate incentives to their downstream partners to ensure that they grow the market for their innovative technologies, (b) to solve potential underinvestment problems resulting from the inability to appropriate the know-how that is typically transferred to manufacturers and distributors, and (c) to cover the fixed costs of their investments in R &D. Loyalty rebates are crucial in all three respects:76

- Loyalty rebate schemes between upstream innovators and downstream manufacturers can have beneficial effects for end-consumers by improving the incentives faced by the latter. This may solve various moral hazard problems in a vertical relationship: conflicts of interest between upstream innovators and downstream manufacturers as regards pricing and investment decision downstream. For example, if manufacturers face a low marginal input cost (i.e., low royalties) they will have good incentives to expand sales of that product by competing on price.

- Loyalty rebates may also contribute to resolve hold-up problems. For example, a technology innovator may be reluctant to transfer some of its “know how” because part of the knowledge transferred to the manufacturers may be used in the development of the technologies of competitors. This under-investment problem may be resolved if manufacturers could commit to concentrate their purchases from the upstream technology company who transfer its knowledge to them. Such commitment is however difficult and may not be credible: ex post, when the know-how has been transferred, manufacturers will have an incentive to purchase from the lowest-priced manufacturer. One option open to the upstream company is to offer a market share discount, or other loyalty-inducing discount, so as to ensure that the manufacturer has a high-powered incentive to concentrate its purchases on its products. This solves the hold-up problem and increases efficiency.

76 A. Jorge Padilla and Donald Slater, “Rebates as an Abuse of Dominance under Article 82 EC” in D. Geradin (ed.) GCLC Research Papers on Article 82 EC, Global Competition Law Center, 2005.
Loyalty rebates may also facilitate efficient recovery of fixed costs. When production/innovation involves significant fixed costs, prices will be set above marginal costs. The price-cost margin must be sufficiently high to recover fixed costs. Otherwise, production/innovation will not be sustainable in the long run. The problem is that higher prices mean lower volume, which implies that in order to recover fixed costs prices may have to be significantly high. This has adverse implications on consumer welfare. One possible way to solve this dilemma is to charge a relatively high price for those units where the elasticity of demand is low (the non-contestable share of the market) while at the same time charge a small price for those units for which demand elasticity is high (the contestable part of the market). In this way, the company can simultaneously profit from a higher margin on the infra-marginal units without losing volume at the margin.

5.6. Tying and Bundling

The Discussion paper “talks the talk” but fails to “walk the walk” as regards the treatment of tying and bundling. The Discussion paper recognises that “Tying and bundling are common practices that often have no anticompetitive consequences.” (§ 178.) However, these practices may also lead to the “…following possible anticompetitive effects: foreclosure, price discrimination and higher prices.” (§ 179.) Tying and bundling are more likely to be anticompetitive in industries with economies of scale, network effects and high barriers to entry. (§ 180.) We have three major objections to the treatment of tying and bundling in the Discussion Paper — always from the perspective of the dynamically competitive industries.

First, while the Discussion Paper mentions that these business practices are most often undertaken for efficiency reasons, it makes it almost impossible to run an efficiency defence. In § 205, the Discussion Paper states that tying and bundling product integration is “more likely to fulfil the conditions for an efficiency defence than is contractual tying or bundling.” This is helpful. However, note that the Discussion Paper imposes a very high threshold for an efficiency defence. § 206 discusses all the conditions that need to be fulfilled “[f]or tying not to
be abusive …” Note that, in this respect, and in line with Tetra Pak II, the Discussion Paper states

- it may be abusive for a dominant company to tie sales of products even when this is in accordance with commercial usage in the market. (§ 182.)

This makes no economic sense. When a given practice is undertaken by both companies with and without market power, we would expect that the practice cuts costs or enhances value to consumers. After all, competitive firms cannot survive indefinitely if they do not use the most efficient methods of producing, designing and distributing products.

Second, it is particularly disappointing to see that one of the alleged anticompetitive effects of tying is price discrimination. Most economists have regarded price discrimination as a legitimate justification for tying and bundling. The Discussion Paper’s price-cost benchmarks in connection with mixed bundling and the use of bundled rebates make it impossible to rely on mixed bundling to price discriminate efficiently.

In § 190, it is said that when the products are sold both separately or in a bundle (i.e., when the dominant firm’s strategy is to offer a mixed bundle),

the incremental price that customers pay for each of the dominant company’s in the bundle should therefore cover the long-run incremental costs of the dominant company of including this product in the bundle.

This rule is problematic for many industries and, in particular, in so-called “two-sided” industries, such as video games and video consoles. In those industries, a firm may find it optimal to subsidise one side of the market (the consoles), charging prices which are not able to cover the long-run incremental cost, in order to boost demand for the system and reap the

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79 The same applies to bundle rebates (§§ 192 - 194.)
profits with the other product (the video games). Economists have shown that what is optimal for firms in those industries tends to enhance consumer welfare.\textsuperscript{80}

Third, the approach proposed with respect to tying and bundling is particularly problematic in industries with some of the characteristics of the high-tech industries, the very industries which are the focus of our comments. This is likely to lead to false convictions and a reduction in dynamic efficiency, since in these industries technological progress often means integration. Consider, for example, the new mobile phones which integrate email services, cameras, mp3 players, etc. Technological integration is driven in part by the evolution of consumer demand, but also owes to a number of additional supply-side considerations, such as miniaturisation, technological convergence, reducing energy consumption, etc. Placing tight constraints on the ability to integrate features that were traditionally supplied separately may thus reduce innovation and harm consumers.\textsuperscript{81}

This last shortcoming could be addressed with the use of a well-specified “separate products” test. This test could establish whether a tying good (product A) and a tied good (product B) are indeed two distinct products. The Discussion Paper states in § 186 that this test is met when

there are already in the market independent companies who are specialised in the manufacture and sale of the tied product without the tying product.

This rule leads to absurd conclusions: shoes with laces are not single products, nor are cars with tyres, cold medicine with pain relievers included, planes with engines, computers with hard drives, phones with SIM cards, the Financial Times with its cross word puzzle, or an MBA at INSEAD with accounting classes required. The single-product test in the Discussion Paper fails to capture those product configurations that are the source of the competitive distortion that they believe the tying law should remedy. A firm has engaged in tying under their analysis if it offers customers AB without also offering customers A. If there is no


\textsuperscript{81} The Discussion paper helpfully recognises that the two separate product test is particularly problematic in industries where new products combine features that were typically available in separate products. (§ 187.)
material demand for A, then the failure to offer A cannot have any competitive consequences. Material demand for both products A and B is required for the decision to offer only AB to restrict consumer choice in a way that is meaningful. Indeed, lack of material demand for A is the test that is needed to eliminate cases such as shoes with shoelaces and cars with tyres that people view as integrated products.82

5.7. Refusals to deal IP

Compulsory licensing of intellectual property (IP) affects both the profits of successful innovators and those of their competitors. In general, it has profound adverse effects on the incentives to invest in R&D, to innovate, and to seek intellectual property protection.83

First of all, it is almost universally agreed that successful innovators must receive a reward for their risky and costly investments in research. The Kok Report, prepared in response to an initiative of the European Council, recognises that “companies will only invest in innovation and R&D if they have the certainty that they will be able to reap the rewards of that investment.”84 In their characteristically incisive style, Professors Dennis Carlton and Jeffrey Perloff ask:

Why would anyone be willing to incur the entire expense of developing new information, processes, or products if people could benefit from them for free?85

It is also universally agreed (and is, arguably, true by definition) that compulsory licensing reduces the innovators’ expected reward.86 Hence, it inevitably leads to lower investments in R&D, thereby slowing down the pace of technical progress.


83 For a general discussion of the incentives to innovate, see, for example, Jean Tirole, The Theory of Industrial Organization, MIT Press, 1988, chapter 10. For a theoretical explanation of why compulsory licensing impacts negatively the incentives to innovate, see Richard J. Gilbert and Carl Shapiro, “An Economic Analysis of Unilateral Refusals to License Intellectual Property,” Proceedings of the National Academy of Sciences, 1996, at page 12753.


85 Carlton and Perloff, Modern Industrial Organization 3rd Edition at page 506.
Less obvious, but no less important, is that compulsory licensing raises the expected profits of those firms that do not invest in R&D. If compulsory licensing of the prospective innovation is anticipated, the patent race turns into a waiting game. Instead of striving for being first to invent, firms wait for others to invest. In the extreme case, the difference in the payoffs obtained by the winner and the losers in the patent race may be so small that investment and innovation cease. As pointed out by Philip Lowe and Luc Peeperkorn, senior officials at the Directorate General for Competition of the European Commission, “…[e]arly copying of an innovation and free riding on an innovator’s efforts undermine the incentive to innovate.”

It is sometimes argued that these adverse effects of compulsory licensing on the incentives to innovate can only materialise when compulsory licensing results in cloning. This is not true. Even if would-be licensees did not blatantly copy the protected product, generally speaking they would steal some of the innovator’s customers. This business stealing effect is the reason why Professors Richard Gilbert and Carl Shapiro have stated that they would not necessarily support compulsory licensing of IP even when:

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87 Philip Lowe and Luc Peeperkorn, “Singing in Tune with Competition and Innovation: The New EU Competition Policy towards Licensing.” *Fordham Corporate Law Institute Annual Conference: Roundtable on Intellectual Property and Antitrust*, 2004, at page 2. Compulsory licensing may also distort the innovator’s choice whether to patent the innovation or to keep it secret (e.g., if patent compulsory licensing is perceived as more likely than trade secret compulsory licensing).
such property is necessary for the production and marketing of a new product for which there is potential consumer demand.\footnote{88}

The Discussion Paper aptly recognises that “the refusal to licence intellectual property […] does not in itself constitute an abuse,” since “the very aim of the exclusive right is to prevent third parties from applying the IPR to produce and distribute products without the consent of the holder of the rights.” (§ 239) In line with the ECJ case-law, the Commission thus concludes that a refusal to licence can be abusive only in 

\textit{exceptional circumstances}. The remainder of the Discussion Paper’s section on refusal to supply, however, contains extremely worrying language that risks leading, in practice, to a broad duty to licence IPRs. The discussion that follows focuses on the aspects of the Discussion Paper most subject to criticism.

\section*{Separate upstream and downstream markets}

The doctrine of IPRs misuse (which is obviously related to compulsory licensing) aims at identifying cases in which the IP holder tries to unduly extend its legitimate market power onto an adjacent market.\footnote{89} If the patentee has invented good A, so the argument goes, he is entitled to a temporary monopoly over good A only; if he tries to monopolise the market for good B (e.g. by tying A and B), this is a misuse of the patent rights.

Such a leveraging objective was at the core of \textit{Commercial Solvents} \footnote{90} and subsequent refusal to supply cases. The logic of these cases, where the Community courts sought to prevent vertical some form of vertical foreclosure, requires the identification of two separate markets, the upstream and the downstream market.\footnote{91} For example, in \textit{Magill} the two markets were the market for TV broadcasting and the market for TV guides, respectively.\footnote{92}

\begin{itemize}
\item \footnote{88} See, Gilbert and Shapiro, note 7 above. See also the discussion of the Community Court’s test in \textit{IMS Health} below.
\item \footnote{89} This doctrine allows an affirmative defense to patent infringement when the alleged infringer shows that the patentee has impermissibly broadened the scope of the patent with anticompetitive effect.
\item \footnote{91} See Geradin, supra note 42, at 1530.
\item \footnote{92} Joined cases C-241/91 and C-242/91 \textit{RTE and ITP v. Commission} [1995] ECR I-743.
\end{itemize}
§ 227 states by providing that, while refusal-to-licence cases typically require the identification of upstream and downstream markets:

In some circumstances, there may not be an existing market for the input in question as it is used only by the owner in a captive market. For example, an IPR may be nothing more than an input that is not marketed separately from the goods and services to which the IPR relates. However, it is sufficient that a captive market, that is, a potential market, or even a hypothetical market, can be identified. Such is the case where there is an actual demand for the input on the part of undertakings seeking to carry out the activity for which the input is indispensable.

While this language directly stems from the *IMS Health* case decided by the ECJ, it is disappointing that the Commission fails to put it in perspective. In *IMS*, the copyrighted “1860 brick structure” had become a *de facto* standard and thus IP guaranteed a wider monopoly (i.e., a monopoly in the market for pharmaceutical data) than the innovation (the “1860 brick structure”) would normally entail. However, the Discussion Paper’s language potentially means that dominant firms may be forced to share every technological advance they have made to improve their production processes with competitors, even if there is no existing market for such technology. A refusal to share an innovation could now be considered as an abuse of a dominant position absent any leveraging attempt. § 227 could be particularly damaging in innovative industries where technological advances are the most important form of competitive advantage.

**The new product test – lack of clarity**

More importantly, § 239 provides that

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93 Case C-418/01 *IMS Health GmbH & Co. OHG and NDC Health GmbH & CO, KG*, [2004].

94 Geradin, note 42, at 1530 (“As any intellectual property right could “hypothetically” be marketed as a stand-alone item (even if, in practice, a rational entrepreneur would not do so, e.g. because of transaction costs, the inability to price a licence, etc.), the holder of the right would then be forced to grant a licence to any competitor which could prove that such a licence is necessary to allow it to compete on a downstream market. Applied in such a way, the test set by the ECJ could create a huge disincentive for dominant firms to invest into new production processes that would allow them to gain a competitive advantage vis-à-vis competitors as the products of such investments may have to be given to these competitors on the ground they need them to be able to compete with the dominant firm on a downstream market.”)

the refusal by a dominant company to licence access to the IPR could be considered abusive when [the conditions imposed in the ECJ’s Bronner case-law95] are all fulfilled and, furthermore the refusal to grant a licence prevents the development of the market for which the licence is an indispensable input, to the detriment of consumers. This may only be the case if the undertaking which requests the licence does not intend to limit itself essentially to duplicating the goods or services already effect on this market by the owner of the IPR, but intends to produce new goods or services not offered by the owner of the right and for which there is a potential demand. (Emphasis added)

While the Discussion Paper confirms that the refusal to licence should be considered as an abuse only in exceptional circumstances, the exceptional-circumstances test it proposes is imprecise and might be met too easily. In particular, the exceptional-circumstances test comprises an indispensability test (the input is indispensable and the refusal excludes all competition),96 and a “new product” test. It is the “new product” test the Discussion Paper draws from the Magill/IMS Health case (new goods or services not offered by the owner of the right and for which there is a potential demand) that is unlikely to be adequate.97

First of all, novelty is a vague term to which the Commission fails to provide a clear meaning for the purpose of applying Article 82. This is particularly worrisome in highly dynamic industries, which are not easy markets such as TV magazines as it is often very

96 These are clearly two faces of the same coin: if the input is really indispensable, it is difficult to see how a refusal to license could fail to exclude all competition, and vice versa.
97 See Geradin, supra note 42, at 1531 (“As stated by the Court in IMS, this condition [of novelty] is problematic. The Court indeed fails to specify what is to be precisely understood by “new product”, a term that is not subject to any well received legal or economic definition. Does the Court consider that a new product is a product that is entirely different from the product already offered by the copyright holder? Or does it consider as “new product” a product which represents mere improvements of the product already sold on the market by the copyright holder? …... It is a pity that the Court chose to refer to a soft concept such as “new” rather than to a well-established and clearly defined competition law concept, such as the notion of substitution. From that standpoint, two options can be envisaged. Either the test of the Court requires that the new product be non-substitutable to the existing product, thereby creating a new product market. But this interpretation would not seem reconcilable with the condition that, for a refusal to grant a licence to be considered as abusive, the owner of the essential facility must exclude competition on a secondary market on which it competes with the access seeker. Or, the Court consider as sufficient that the new product presents some novel features while remaining substitutable with the existing product. This interpretation, which seems to be the one supported by the Court, would, however, imply a much lower threshold for the application of Article 82 to refusal to licence cases.”.)
difficult hard to distinguish what truly is a new product from what is merely a trifling improvement of an existing product.\textsuperscript{98}

Although the Commission should be cautious in departing from previous case-law of the ECJ, the Discussion Paper, however, misses an opportunity to clarify the circumstances in which the Commission will consider that this new product will be met in practice and hence influence the direction of future enforcement action and case-law. \textsuperscript{99} We are concerned that the “new product” test as it now stands is both too weak and too vague and thus may lead the Commission may mandate compulsory licensing when it is not efficient.

**The new product test – patents v. copyrights**

The lack of precision of the “new product” test may become especially troublesome when it is applied in cases involving alleged refusals to licence patented innovations. The “new product” test has been developed by the Community Courts in cases involving copyrighted information, where the indispensability test was exceedingly difficult to pass. The Courts could thus adopt a relatively weak “new product” test and still ensure that a refusal to licence intellectual property could be abusive only exceptionally. If such a relatively weak and imprecise test is mechanically applied in cases involving a patented technology (in which the indispensability test is inherently much less demanding) there is a risk that a refusal to license might be found abusive too often, perhaps even routinely.

In the two landmark cases involving a refusal to license intellectual property – *Magill* and *IMS Health* – the issue at stake was the licensing of copyrighted information. Generally speaking, the protection conferred by copyrights is severely limited in scope; in summary, copyrights protect the expression of an idea, not the idea itself. Consequently, it is very unlikely that copyrighted information can be an indispensable input. The circumstances of *Magill* and *IMS Health* are indeed quite special. In *Magill*, three broadcasters, whose TV programmes were copyrighted, refused to licence their TV listings to a firm that intended to publish a comprehensive weekly TV guide. Having identified a secondary market for TV

\textsuperscript{98} See section 6.1 above.

\textsuperscript{99} Id. See also Ahlborn, Evans and Padilla, note 53.
guides, the ECJ could not avoid concluding that the copyrighted information on TV listings was indispensable to compete in the secondary market. Such situations are, however, very rare. For example, although a licence from J.K. Rowling is indispensable to produce a Harry Potter movie, it is hardly indispensable to compete in the relevant secondary market if this market is taken to be the movie industry, or even the market for movies where the main character is a young boy endowed with magic powers. In IMS Health, the copyrighted “1860 brick structure” was not indispensable ex ante, i.e. when IMS Health started to sell pharmaceutical data to its clients. The “1860 brick structure” had (perhaps) become an indispensable input only ex post, after sufficiently long time-series data had been collected. Because old data had been presented according to the “1860 brick structure,” and clients wanted the data to be comparable over time, the “1860 brick structure” had effectively become a *de facto* standard. Such an outcome is not unique to IMS Health, but is clearly unusual.

In contrast with copyrights, patents generally have a broad scope as they protect ideas and not merely a particular expression of an idea. In contrast with physical property, patented products or methods cannot be lawfully reproduced at any cost. Many patented innovations would therefore pass the indispensability test easily. This means that a self-consistent approach to the refusal to licence intellectual property requires that when a patented technology is to be licensed, the “new product” test should be precise and demanding enough to ensure that compulsory patent licensing remains an exceptional outcome.

Arguably, when the alleged refusal to licence involves a patented technology, the dominant firm should be compelled to licence its technology only when the firm that requests a licence intends to operate in a separate market, or at the very least in a market that overlaps only marginally with that supplied by the patentee. Since it is unlikely that a dominant firm ...

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100 Here the primary market is the market for books, but Rowling’s copyrights extend to any derivative work.

101 Because of the prevalence of network externalities in the software industry, in this industry there are various examples of copyrighted information (i.e. computer programs or components of computer programs) that became a *de facto* standard, like the Lotus 1-2-3 command structure.

102 This would be true even if one stuck to the case-law formulation, which is slightly stricter than that advocated by the Discussion Paper. If it is already required that all competition is excluded, it seems that the only way in which the indispensability test could be made even stricter is by artificially broadening the definition of the relevant market – a solution that we do not advocate.
will refuse to licence if the would-be licensor does not intend to compete with it, or if the degree of business stealing entailed by competition is negligible, these refusals would occur only in exceptional circumstances, while the harm to competition of such refusals would be exceptionally large.

The new product test – follow-on innovation

Not only does the Discussion Paper fail to clarify the “new product” test, but it also weakens the “new product” test substantially in a potentially wide set of circumstances. § 240 provides:

A refusal to licence an IPR protected technology which is indispensable as a basis for follow-on innovation by competitors may be abusive even if the licence is not sought to directly incorporate the technology in clearly identifiable new goods and services. The refusal of licensing of an IPR protected technology should not impair consumers’ ability to benefit from innovation brought by the dominant undertaking’s competitors.

This rule could annihilate the incentives of firms engaging in radical, first-generation innovations for the sake of protecting firms that are merely engaged in exploiting the technological breakthroughs of their competitors. Moreover, it is unlikely that this rule promotes second-generation innovation significantly. Because the costs of this rule are likely to be high and the benefits small or non-existent, this paragraph should be eliminated.

First, the costs of weakening the “new product” test as suggested in § 240 are high. Almost any technology may be slightly improved when is used. Such improvements can range from the customisation of a product to better fit the needs of a particular user, to significant innovations that are sufficiently novel and non-obvious to deserve patent protection in its own right. If all this innovative activity, some of which is a matter of routine, could qualify as follow-on innovation, dominant firms would then be forced to licence their rivals even when the licensed technology is not sought for direct incorporation in a product or a service. In practice, this would give a dominant firm’s rivals the ability to pick and choose its technology on the vague notion that it could be helpful at some undetermined future stage to develop a follow-on innovation.
Furthermore, “indispensable as a basis for follow-on innovation” may be taken to mean that the intellectual property is indispensable to use lawfully the follow-on innovation for commercial purposes, e.g. because the follow-on innovation infringes the IPRs held by the dominant firm. Under this interpretation, the indispensability test would be passed as soon as an infringement was found, with the absurd implication that the infringement of an IPR held by a dominant firm would automatically trigger an obligation to licence.

Second, the benefits of the §240 rule are low. To see why, suppose that the follow-on innovation is such a significant progress as to merit a patent. If the follow-on innovation does not infringe the patent on the first-generation innovation, there is no need for a licence. If instead the courts find that the follow-on innovation infringes the incumbent’s patent, the courts are effectively forcing the two patentees to bargain over profit shares, thus allowing the first-generation innovator to capture some of the rents from the improvement. If compulsory licensing were mandated in these cases, there would be a significant shift of bargaining power from the first- to the second-generation patentee, thereby altering the delicate balance struck by patent law and the need to encourage basic and follow-on innovation.

We therefore conclude that § 240 should either be eliminated or substantially redrafted to take into account the considerations expressed above. Alternatively, we believe that the only case in which the cumulative nature of innovative activity might call for the basic innovator to be compelled to licence its IP is when the IP is indispensable to search for the follow-on innovation. More precisely, what we have in mind is the case in which the protected technology is a pure research tool, i.e. a piece of knowledge with zero stand-alone economic

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103 This is indeed possible, depending on the leading breadth of the first-generation patent. Such cases are so frequent that patent lawyers have developed a special jargon, in which the patent on the basic technology is termed dominant, that on the follow-on innovation subservient, and the two patents are jointly said to be blocking. See Vincenzo Denicolò, “Two-stage Patent Races and Patent Policy.” RAND Journal of Economics, 2000; and Suzanne Scotchmer, Innovation and Incentives, MIT Press, 2004, chapters 2 and 5.

104 When innovation is cumulative, basic innovations need forward patent protection, because otherwise future innovators could compete away the original innovators’ profits; and because the first innovators should be rewarded for opening the way to the subsequent improvements. The patent system provides forward protection in two ways: first, any patent application must meet certain novelty requirements; second, even patentable improvements may constitute infringement on the original patent, depending on the first-generation patent’s leading breadth. See Suzanne Scotchmer, “Standing on the Shoulders of Giants: Cumulative Research and the Patent Law.” Journal of Economic Perspectives, 1991; and Vincenzo Denicolò and Piercarlo Zanchettin, “How Should Forward Patent Protection Be Provided?” International Journal of Industrial Organization, 2002.
value, which however is indispensable to conduct the research that may eventually lead to valuable follow-on innovations. Many practitioners, especially in the biotechnology industry, have voiced concerns that the “patentability” of research tools risks stifling innovation. A case can be made (albeit perhaps not an entirely compelling one) that the refusal to licence proprietary research tools owned by a dominant firm may be abusive.

A policy whereby a refusal to licence a proprietary research tool may be abusive would conform to the general principle that a refusal to licence can be abusive only in exceptional circumstances because indispensable research tools will generally not be proprietary, and because a refusal to licence may entail an exceptional harm to innovation. It is relatively infrequent that an indispensable research tool is proprietary since, as explained above, copyrights can rarely provide broad protection. And since utility is a patentability requirement, an innovation cannot be patented unless it has an economic application. In principle pure research tools are not patentable. For example, laws of nature, scientific theories, mathematical theorems etc. are not patentable. In addition, some kind of “experimental exemption” is often available both for patents and copyrights. Normally this means that research can be conducted without requesting licences from the holders of intellectual property. However, sometimes an objective assessment of whether an innovation meets the utility requirement is difficult, or it may happen that an innovation is “useful” (so that it is patentable) and yet most of its value comes from its use as a research tool. When an indispensable research tool happens, indeed, to be proprietary, a refusal to licence may entail harm to innovation. If a dominant firm refuses to licence a research tool, which is indispensable to conduct research, there is a risk that potentially important – but perhaps unforeseeable – innovations are not achieved.

However, this negative effect is mitigated when the owner of the research tool can conduct some research on its own. However, when a research tool has many potential applications, and ideas for such applications are widely distributed among individual researchers, the owner of the research tool may be unable to exploit it fully. It is precisely in these circumstances that the owner of a research tool would find it profitable to licence it. On balance, it is thus difficult to tell whether proprietary research tools can really impede

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innovations, and even in this case compulsory licensing should be viewed as a truly exceptional remedy.

The size of the R&D investment

The Discussion Paper recognizes that “in the assessment of a refusal to supply it must also be kept in mind that the indispensable input […] often is the result of substantial investments entailing significant risks”, and that “in order to maintain incentives to invest and innovate, the dominant firm must not be unduly restricted” (§235). The Discussion Paper then proceeds to list a number of cases in which the need to maintain incentives to invest is limited and so a refusal to supply is more likely to be considered abusive. Among these cases, it mentions the case in which:

the investments behind innovations leading to intellectual property rights may not have been particularly significant, in which case it may be likely that the investment would have been made even knowing that a duty to supply would be imposed. (§236.)

We contend that a policy that conditions the degree of protection conferred to innovators on the size of their investments in research is both wrong in principle and insurmountably difficult to implement in practice. In principle, such a policy rests on the premise that it is possible to identify precisely cases in which innovators are over-rewarded in the sense that they would have invested and achieved the innovation even with a lower expected reward. But this premise would be correct only if the decision to invest in research were an all-or-nothing decision, and innovative activity were deterministic. In reality, research is inherently uncertain and investment in research is variable: the greater the investment in research, the greater the probability that an innovation is achieved. Therefore, there is no

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106 Walsh et al (2003) find that proprietary research tools have the potential of impeding research is they are enforced strictly; however, they also find that the owners of proprietary research tools typically adopt a rather lenient enforcement policy with respect to universities and public laboratories. This means that the problem of proprietary research tools may have been exaggerated after all. See Walsh JP, Ashish Arora and Wesley Cohen, “Working Through the Patent Problem.” Science, 2003

107 What empirical evidence is available suggests that the elasticity of the probability of success with respect to the R&D expenditure ranges from .5 to .8. See e.g. Ashish Arora, Marco Ceccagnoli and Wesley Cohen “R&D and the Patent Premium”, NBER Working Paper No. 9431, 2003 and Daron Acemoglu and Joshua Linn, “Market
easily identifiable threshold beyond which a greater reward does not stimulate more investment in research.

In practice, the implementation of a policy that conditions the degree of protection conferred to innovators upon the size of their investments in research requires that the investment in research is observable and verifiable. This is hardly true. For example, when fiscal incentives are provided to stimulate investment in R&D, fiscal agencies devise very complex rules to determine what is and what is not an investment in research, and yet it is universally recognised that these rules are routinely manipulated. No doubt, antitrust authorities are not better positioned than fiscal agencies to ascertain whether a particular expenditure can qualify as an investment in research or not.

But even if the investment in research were observable and verifiable at the firm level, this would not provide all the information that is needed to implement the policy advocated by the Discussion Paper. Two further problems would arise. First, a firm’s investment in research may not be entirely attributable to a particular innovation, especially if the firm is large and holds a well-diversified portfolio of research projects. Second, the investment in research of the successful firm may not provide a correct measure of the difficulty of achieving the innovation. Often several firms race to obtain an innovation, and the investment in research of any particular firm, including the winner of the race, may well be a small fraction of total R&D expenditures. Just as in a lottery, the amount of money spent to purchase the winning ticket cannot be taken as a proper measure of the sponsor’s revenue; in a patent race, the winner’s investment in research does not measure total R&D effort.

Unless these two problems can be fixed somewhat (and it is not obvious that they can), a policy that conditions the degree of protection conferred to innovators upon the size of their investments in research would have the perverse effect of favouring large incumbents over small firms or start-ups. Incumbents, with their large research budgets, could easily claim that most of their investment in research is attributable to the challenged innovation, which could camouflage as very costly to achieve thereby commanding strong protection. By way of

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contrast, among small firms and start-ups, those that survive and prosper must be precisely the few lucky ones that have managed to reap disproportionately to what they sowed, and that as a consequence would be most likely subjected to a duty to license. As a result, the policy advocated by the Discussion Paper may create an incentive to conduct research in large organizations even though efficiency would call for research to be conducted in small units. It would be ironic that competition policy pursued such a goal.

6. CONCLUSION

We have identified a series of concerns in connection with the Discussion Paper on the application of Article 82 published by DG Competition and subject to public consultation. Most importantly, the analytical framework and the antitrust rules that are proposed in the Discussion Paper fail to take into account the special characteristics of dynamically competitive industries, such as the ICT industries. We have explained why the rules proposed in the Discussion Paper are likely to cause numerous false convictions (or Type I errors) in these industries: unilateral practices that are efficient and benefit consumers may be found to be anticompetitive incorrectly. The cost of these errors will be the chilling of many innovative efforts in Europe. This would be unfortunate because, as it is widely recognised, Europe lags behind the United States and Japan in R&D investment.

The European Commission has time and time again repeated the importance of the ICT sector for growth and has set out ambitious goals to make the European Union the leading information society in the world. But, as the European Council recognised in its Lisbon Summit, it is of paramount importance to ensure that innovation is appropriately rewarded to achieve this goal: “At the same time, innovation and ideas must be adequately rewarded within the new knowledge-based economy, particularly through patent protection.” In our opinion, and for the reasons set out in this paper, the antitrust rules and legal standards that emerge from

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DG Competition’s Discussion Paper, especially those concerning compulsory licensing, appear to contradict the spirit of the Lisbon strategy.