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EUROPE SHOULD STOP TAXING INNOVATION

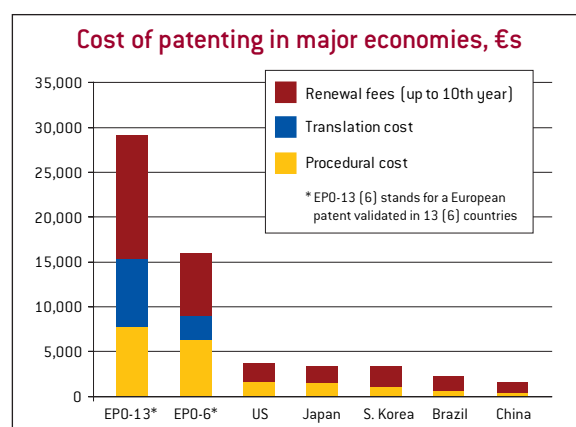
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SUMMARY The European Union failed to achieve its Lisbon agenda target of spending three percent of GDP on research and development, and so, in the EU2020 strategy, has given itself another decade to meet this goal. Meanwhile, the EU has been leapfrogged by China in terms of business R&D spend. One key element to stimulate innovation and ultimately drive European growth would be to create the long-awaited single EU patent. Today's fragmented European patent system is poor value for money and overly complex, not least because national patent systems still have the last word over all European patents on their territory. After nearly 50 years of failure to create the EU patent, language issues and the design of a centralised patent litigation court remain unresolved. The recent EU Council deal on an 'enhanced' European patent system is potentially a step forward, though many problems remain unresolved.

POLICY CHALLENGE

The risk for Europe is that current moves result in a patent agreement that does not cure the system of its major ills, and thus does not bring about any significant improvement for those who need it most: entrepreneurs and innovative companies starting out on the innovation process. The creation



of an effective single European patent requires i) English-only post-grant translation, ii) the end of nationally granted patents, iii) phasing-out of the current 'European patent', iv) lower fees for young innovative companies, and v) a radical shake-up of the governance of the European Patent Office.

Source: Bruegel based on van Pottelsberghe and Mejer (2008) and van Pottelsberghe and François (2009). Figures refer to 2008.



PATENT SYSTEMS underpin economic growth. If a patent system is suboptimal, it is a sure sign that research and development will be hampered and growth will be hamstrung. A well-functioning patent system is a fundamental framework condition to sustain the pace of innovation and the distribution of its benefits both within and between countries¹.

Europe has been working on its patent system for more than 45 years and it is still a work in progress. Unnecessary expense and legal uncertainty still abound. Yet these are the very two features that count the most for business, especially small and medium-sized companies. There is still no simple 'one-stop-shop' for companies seeking Europe-wide patent protection, and duplicate fees and administrative charges – not to mention the burden of possibly multiple litigation – bloat the cost of patenting in Europe. The EU faces increasing competition from China, Japan and the United States for scientific talent and R&D resources, and so if Europe is serious about creating the right environment for innovation and

growth, it needs to sort out its patent system fast. Until it does so, Europe is effectively putting a tax on innovation.

Ten years ago the EU aspired to invest three percent of its GDP in R&D by 2010. It still spends less than two percent. Not only has Europe's R&D effort been flat-lining for 20 years (see Figure 1a), but Europe still lags far behind the US and Japan on this score and is being leapfrogged by China, as illustrated by business R&D spend (see Figure 1b). The trend suggests that the relative situation will worsen for Europe. China has long had two decisive competitive advantages over Europe: its large 'single' market and a low-cost but educated workforce. It is fast acquiring a third one: its ability to innovate (see Figure 2 on the next page).

In its 'Europe 2020' strategy for smart, sustainable and inclusive growth – the successor to the EU's Lisbon agenda – the EU has rolled over the R&D spending target of three percent of GDP. Among the factors that should spur greater business R&D spending is the

patent system, but the Commission president recognises that Europe's patent system is failing to pull its weight, in particular because it is fragmented:

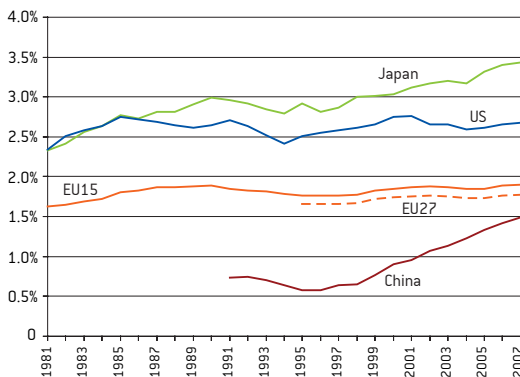
'There are some things in our strategy that you will have heard before. We make no apology for that. They would not be here if they had been done properly in the last ten years. To give some examples: it is not acceptable that because we do not have a Community patent, European companies face translation costs of around €3000 on each patent. It is thirteen times more expensive in the EU than in the US and eleven times more expensive than in Japan' (Barroso, 2010).

True, the patent system is not the only cause of Europe's lack of inventive activity, but it is one of the weakest links between Europe's still-strong scientific base and its lack of knowledge-based entrepreneurship.

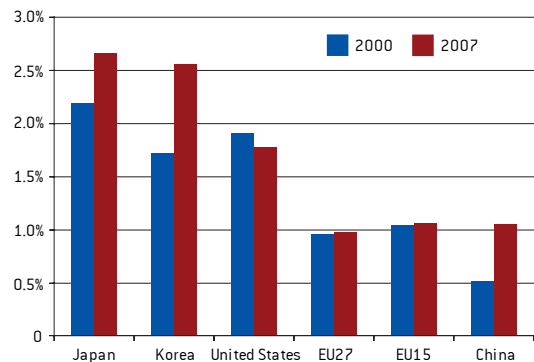
In December 2009, EU industry ministers meeting in the Competitiveness Council claimed

Figure 1: Asian progress, European stagnation

1a: R&D intensity of major economies, 1980-2007



1b: Business-funded R&D as a % of GDP



1. For a detailed analysis, see van Pottelsberghe (2009).

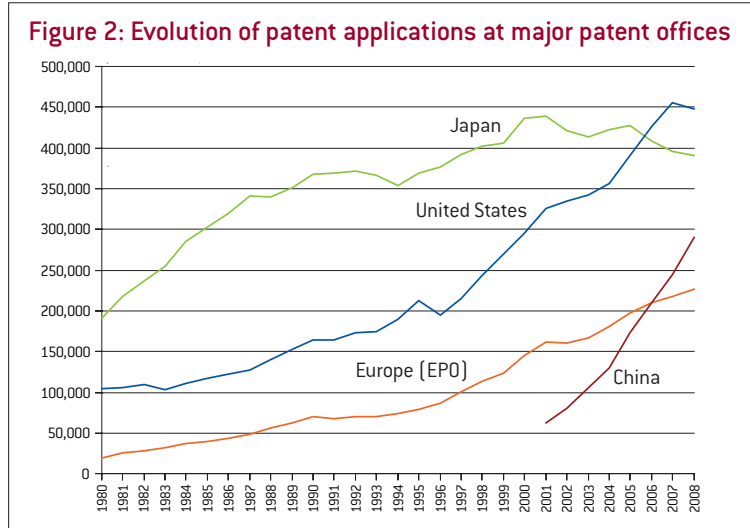


to have, at last, overcome the intractable problems that have prevented the EU patent from becoming a reality². Optimistic declarations were made about a deal that would 'make patenting and innovating easier and more affordable.' Unfortunately, the evidence seems to tilt towards a rather less optimistic assessment [see section 3].

This Policy Brief argues that Europe needs more substantial improvements to be made to its patent system, including a radical overhaul of its governance. Section 1 explains why and how a patent system should sustain an economy's long-term competitiveness, and briefly summarises the weaknesses of the current system. Section 2 discusses the various reasons that might plausibly lie behind the nearly 50-year long resistance to an EU patent³. Section 3 analyses the strengths and weaknesses of the measures agreed upon by industry ministers in December 2009. Section 4 concludes and puts forward policy recommendations.

1 A NECESSARY REFORM

In order to work properly, a patent system must, first, guarantee a sufficient level of quality in the screening of applications by a patent office and, second, be affordable for small, financially constrained entities like high-tech start-ups. The European Patent Office (EPO), which carries out prior-art searches and tests for inventiveness before granting so-called 'European' patents, performs well on most quality indicators, especially when compared to its US counterpart⁴.



Source: Bruegel based on annual reports of national patent offices.

But the European system is expensive. Once granted, a European patent can only be enforced at national level: it must be translated into several languages and national validation fees and annual renewal fees must be paid. To this, for each fee payment, one must add the frequently compulsory national intermediation services, whereby locally accredited patent attorneys interact with national patent offices (NPO) on behalf of the patent owner. Any subsequent enforcement issue is dealt with at the national level, with national jurisdictions having the ultimate power to decide on the outcome of patent-related litigation.

This fragmented system, if one can call it a 'system', leads to seven failings, described in Box 1 on the next page. As a consequence of these failings, the European patent system is effectively a tax on innovation, and prevents the emergence of an integrated market for inventions and technologies at the very outset of the innovation process. This flawed

system is especially detrimental to young innovative firms.

2 WHY NO EU PATENT AFTER NEARLY 50 YEARS OF DEBATE?

Two official 'fig-leaves'...

The 'official' reasons for the failure to create an EU patent are related to language and the centralised litigation system. On the language question, the blockage comes from countries that refuse to allow patents published in a foreign language to be enforced within their borders, arguing that this would put local entrepreneurs at a major disadvantage compared to foreign competitors. So far, and whatever the true merits of this argument, no agreement has been reached on the translation requirements that would apply with the EU patent. Language remains a major stumbling block.

On the question of the potential establishment of a centralised patent-litigation system, EU member states have so far been unable to agree on where and how a

2. Meeting of 4 December 2009; see eg EurActiv, 7 December 2009, 'Sweden claims breakthrough on EU patent impasse'.

3. In the remainder of this document we will use the new term 'EU patent', not 'Community' patent. The post-Lisbon Treaty 'EU patent' project was for nearly 50 years called the 'Community patent'.

But the key material distinction to make is between the yet-to-be-achieved Community/EU patent and the current 'European patent', which is in effect a patent that must be managed and enforced in each country targeted for protection.

4. Evidence for higher quality in Europe comes from a lower grant rate, a lower workload per examiner and other structural factors as detailed in van Pottelsberghe [2009].



BOX 1:

THE SEVEN DEADLY SINS OF EUROPE'S FRAGMENTED PATENT SYSTEM (van Pottelsberghe, 2009)

- **Affordability:** A European patent that is maintained for ten years in just six countries is four times more expensive than in the US, Japan and many other advanced economies. If all EU countries are targeted for protection, costs are around 20 times higher than in the US.
- **Low quality:** most NPOs continue to grant national patents independently of the EPO, meaning that applicants have a choice of routes for protection. This has resulted in heterogeneous quality standards.
- **Complexity:** enforcing and monitoring patents in many countries is cumbersome, especially for academic spin-offs and high-tech start-ups.
- **Uncertainty:** patents of inventions with high market value are frequently subject to litigation. Within Europe, this can lead to parallel litigations in several countries, often with divergent outcomes (ie one country upholds a patent, a second country invalidates the very same patent).
- **Lack of coherence:** *First*, it is simple to operate 'parallel imports'. Since patents are rarely protected in all EU countries, it is possible to put imitation products onto the European market by first entering through a state in which the competing patented product is not protected and then distributing the imitation products across Europe. *Second*, there are 'time paradoxes', whereby patent infringement damages may be awarded by a national court for a patent that is later declared invalid by the EPO.
- **No coordination at EU level:** there is very little if any EU-level coordination of patent policies and other directly related policies, including science and technology, competition, research and entrepreneurship.
- **Weakness in global negotiations:** the European patent system does not so far have one single representative in international negotiations. Rather, national patent offices have signed unilateral agreements that on past evidence have influenced EPO behaviour (see, for instance, the signatory members of the Patent Prosecution Highways, or PPHs)⁵.

European court would be set up, essentially arguing that national legal systems differ significantly.

...and an additional cause of blockage?

There are two additional explanations for political inertia: financial flows and loss of control. The creation of the EU patent would have significant consequences for several institutions. For instance, the renewal fees paid for the maintenance of European patents and received by NPOs (€ 654 million in 2008) are split into two parts: half is retained by the NPOs and half is remitted to the EPO. Needless to say, this practice generates substantial revenues for NPOs (€327 million, of which about €100

Table 1: Net financial flows resulting from a shift from the current system to an EU patent, by sector (€m)

	EPO	NPOs	Business sector	Attorneys & translators	Lawyers
Designation fees EPO	-25		+40	-15	
Validation fees NPOs		-10	+10		
Translation costs	-20		+129	-129	
Filing patent translation			+60	-60	
Taking over representation			+46	-46	
Intermediary cost for maintenance			+20	-20	
Drop in parallel litigation*			+121		-121
Renewal fees**	+88	+88	-176		
Total	+43	+78	+250	-270	-121

Source: Danguy and van Pottelsberghe (2009), including data from van Pottelsberghe and Mejer (2008). The simulations are performed for 50,000 patents granted by the EPO (representing the actual annual average over the past few years), assuming EPO would machine-translate all granted patents into all EU official languages. * Harhoff (2009) for the lower bound simulation of litigation costs; ** Based on renewal fees generated by the EU patent being split equally between the EPO and the NPOs. The dynamic effect of a more attractive patent system would result in higher maintenance rates and thus more income from renewal fees for both the EPO and NPOs.

5. As explained in van Pottelsberghe (2009), PPHs are collaborative agreements that consist of work-sharing practices, without coordination of quality criteria.

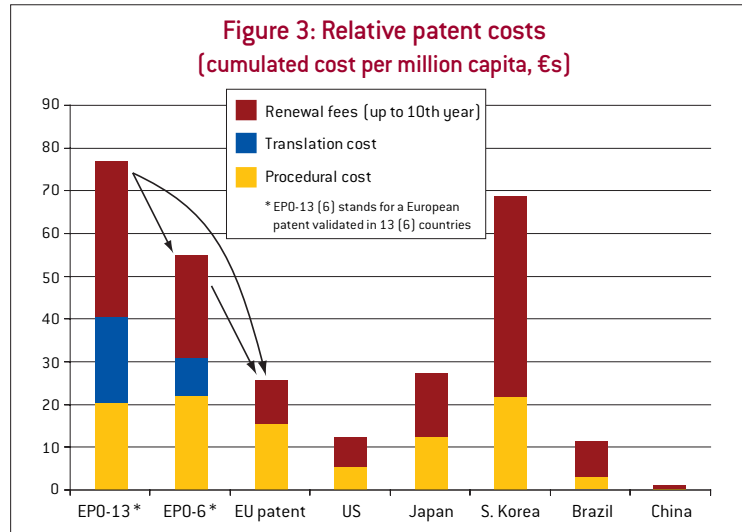


million and €40 million for the German and UK patent offices, respectively). Danguy and van Pottelsberghe (2009) have simulated the financial consequences of a straight switch of 50,000 patents granted by the EPO under the current system to the EU patent. Table 1 outlines the net financial flows, which include changes to renewal fees, translation costs, intermediation costs and litigation costs.

In a nutshell, the EU patent would result in net savings of €250 million for the business sector. But contrary to common assumption, both the EPO and NPOs would also benefit, in the former case by €43 million, and in the latter by €78 million. On the other hand attorneys and translators would lose €270 million and the drop in parallel-litigation costs would amount to at least €121 million. In other words, nearly €400 million would be redirected from patent attorneys, translators and lawyers to patent offices and the business sector. It is worth noting that all NPOs would see a net increase in their budget, except for the German patent office, which would lose the current benefit of its 'largest-economy' status for European patenting activity.

'The system is complex, untransparent and unpredictable, and is ultimately a heavy tax on innovative firms.'

Whatever the real reasons for resistance to change, the fact remains that the current system is overly complex, untransparent and unpredictable, and ultimately constitutes a heavy tax on individual inventors and young innovative companies (Veugelers, 2009).



Source: Bruegel based on van Pottelsberghe and Mejer (2008) and Danguy and van Pottelsberghe (2009). Figures refer to 2008.

3 STRENGTHS AND WEAKNESSES OF THE PROPOSED AGREEMENT

The December 2009 Competitiveness Council reached 'conclusions on an enhanced patent system in Europe'. The main conclusions were that a European patent court would be created, that the European Patent Network (the current arrangements between the EPO and NPOs) should be strengthened, and that an EU patent should be created. The conclusions are promising but also have major weaknesses.

The strengths...

An EU patent is envisaged, but so far no agreement has been reached on translation requirements associated with it. The main strength of the deal is the progress made on convergence on some aspects of the centralised-litigation process, called the 'European and EU Patent Court'

(EEUPC), with exclusive jurisdiction in respect of civil litigation related to upholding and invalidating EU patents and European patents. The EEUPC would include a Court of First Instance, a Court of Appeal and a Registry.

This deal has two broad consequences: the establishment of a single centralised litigation system covering both EU and European patents, and a possible reduction in the relative cost of the EU patent (see Figure 3), as the market would cover 500 million inhabitants. Danguy and van Pottelsberghe (2009) estimate that the cost per million capita could eventually drop by about 45 percent, depending on the final fee schedule and translation agreement.

...and weaknesses

The wording of the Competitiveness Council agreement indicates a very preliminary and fragile agreement. As well as a high degree of caution, there are five main weaknesses of the Council's



'conclusions on an enhanced patent system in Europe'.

No language agreement: a 'separate regulation' on the language regime still has to be agreed to. Knowing that a key dimension of the EU patent is its simplified language regime, a big step still remains to be taken.

Another layer of patents: the envisaged EU patent would be an additional layer, on top of the current European and national patents. NPOs will still grant patents independently from the EPO. Thus applicants can still opt for multiple parallel applications to national offices, some of which may provide an easier route to protection than the EPO process, especially for patents with a low inventive step.

Institutional 'financial' sustainability: The EEUPC has, according to the Council deal, to be self-

financing, with its own financial revenues consisting of court fees. This could lead to overly expensive litigation proceedings. In any case, the Council's demand for budget neutrality of the EEUPC, though part of an agreed political package containing positive elements, is hardly a sign that European governments are ready to boost support for innovation.

Governance failure: this is evidenced by a fragile agreement, an unsolved language puzzle, the lack of willingness to create a truly centralised patent system (three layers are still envisaged), and a strong focus on an 'enhanced partnership' between the EPO and NPOs (the European Patent Network). It may be noted that NPOs sit on the administrative council of the EPO and also influence negotiations on the EU patent given that they participate in the Council's preparatory working groups in this field.

Still no provisions for SMEs: whereas the US and Japan have had provisions for SMEs for many years (SMEs pay only half the fees), the EPO has no fee schedule for SMEs. This is also true for the future EEUPC, which must be self-funded and might lead to prohibitive litigation costs for SMEs.

4 POLICY RECOMMENDATIONS

Even if the recent Council conclusions represent some progress on the road to an effective and efficient European patent system, there are still a series of problems that must still be addressed. We have picked out four issues which are the keys to success:

- Language
- Complexity
- Affordability
- Governance

Problem 1: language. Language has so far been a major obstacle to

Table 2: Filing languages at the EPO, by selected country of residence of applicants, 2009

	English	German	French	Unknown	Total	% English*
Austria	362	1141	0	0	1503	24%
Belgium	1438	36	142	3	1619	89%
Denmark	1445	40	1	0	1486	97%
Finland	1429	11	0	6	1446	99%
France	2712	161	6009	4	8886	31%
Germany	4918	20,129	44	2	25,093	20%
Italy	3693	52	7	88	3840	98%
Luxembourg	196	34	22	1	253	78%
Netherlands	6663	47	5	24	6739	99%
Norway	465	20	6	0	491	95%
Poland	141	16	2	10	169	89%
Portugal	101	2	4	0	107	94%
Spain	1135	51	36	26	1248	93%
Sweden	3089	47	5	5	3146	98%
Switzerland	3464	2017	375	3	5859	59%
United Kingdom	4763	18	21	2	4804	99%
Total	102,843	24,452	6764	242	134,301	77%

Source: EPO; the numbers include Euro-direct applications and PCT-regional phase. * = patents filed in English divided by the total of patents filed in English, French and German.



the EU patent. Instead of compulsory translation into several languages, patents granted by the EPO should be 'English only'. There are several reasons for this:

- English is the most frequently used business language worldwide, and this is a factor with patents as much as in other fields. Of the patent applications filed at the EPO, 77 percent are already in English (see Table 2). Use of English thus represents the choice of the business sector, especially technology-based start-ups and academic spin-offs. English is also de facto the worldwide scientific and technical language. Evidence is provided by the rankings of scientific journals, used to gauge academic scientists' production in most European countries. The majority of ranked journals (more than 95 percent) are English-language⁶.
- The question for the future is not if French or German will remain scientific and technical languages but if English will be challenged by Chinese. The Chinese emergence is a matter of fact (Figure 2). According to Thomson Reuters, the number of scientific articles published by authors based in China have quadrupled since 2000, with more than 110,000 articles in 2008 alone. The EU should secure its long-term access to scientific knowledge by ensuring English remains the main

language of communication for business, scientific and technological matters.

- At the same time, switching to English would be a resolute European step towards the improvement of the global patent system. An English translation of the whole document would make the codified knowledge accessible to third parties (including Japan, the US, China and India), and thus would improve the identification of prior art by non-European companies and patent offices, thereby reinforcing the protection of EU firms abroad.
- When it comes to checking if new technology has already been patented, patents in national languages are of little use. This is because a technology-based new venture located, for example in Belgium, must in any case look beyond the information available in Dutch and French when conducting a freedom-to-operate survey (ie testing if the new venture infringes any existing patents). Therefore, requiring translation of patents into national languages does not serve its stated objective of supporting innovation.

Problem 2: complexity. The agreement on an 'enhancement' of the patent system involves adding an additional layer to it. The proposed system would be composed of nationally granted patents,

European patents (for protection in selected countries) and EU patents (for protection in the whole EU). There will thus still be ample scope for individual businesses to 'game' the system. But this arrangement is also a clear message that Europe does not give top priority to creating a single, market-spanning patent system (as the US and China have). The cost of this approach is ultimately borne by the European economy as a whole. The solution is twofold:

- NPOs should stop granting patents, but should still provide advice and search services for local companies.
- Agreement should be reached to end the current European patent directly, or at least to phase it out after a few years of a dual system.

Problem 3: lack of affordability for SMEs and especially young innovative companies. The EU patent would already be a huge step forward for these applicants. Relative costs (per million capita) would drop substantially (Figure 3). But more could be done to further offset these high entry fees:

- A 50 percent reduction in entry fees for young innovative companies (filing fees, search fees, examination fees) up to the sixth year (the average duration of the examination period).
- A pay-back process (of the 50 percent reduction) could be scheduled for companies that keep their patents enforced for more than six years.

6. See for instance the journals listed in the CNRS ranking in France, or in the German Academic Association for Business Research (Verband der Hochschullehrer für Betriebswirtschaft).



Problem 4: Governance failure. Presently, 27 NPOs with frequently diverging views control the EU system. They fear that reform will undermine them. Furthermore, the EPO is independent from EU institutions, meaning little coordination between it and the European Commission. Two steps should be taken to bridge these gaps:

- Other key stakeholders than NPOs should be part of the administrative council, including a representative of the business sector (large firms and small firms), a representative of consumers' associations, a representative of academic institutions, and representatives of the EU institutions, for

example from the directorates-general for research, enterprise or internal market.

- The board of the EPO should be streamlined, with the number of representatives of national patent offices sitting on it being reduced from 35 currently to 10 or 15.

REFERENCES:

Barroso, J. M. (2010) 'Opening remarks of President Barroso at the Press Conference on Europe 2020, 3 March', <http://europa.eu/rapid/pressReleasesAction.do?reference=SPEECH/10/60&format=HTML>, accessed 27 March 2010

Council of the European Union (2009) 'Conclusions on an enhanced patent system in Europe', 2982nd Competitiveness (Internal Market, Industry and Research) Council Meeting press release, 4 December, Brussels

Danguy J. and B. van Pottelsberghe de la Potterie (2009) 'Cost-benefit analysis of the EU patent', *Bruegel Working Paper 2009/08*

Harhoff D. (2009) 'Economic Cost-Benefit Analysis of a Unified and Integrated European Patent Litigation System', *Final Report*, Tender No MARKT/2008/06/D

van Pottelsberghe B. (2008) 'Europe's R&D: missing the wrong target?', *Bruegel Policy Brief 2008/3*

van Pottelsberghe B. (2009) *Lost property: the European patent system and why it doesn't work*, Bruegel Blueprint, Brussels

van Pottelsberghe de la Potterie B. and D. François (2009) 'The cost factor in patent systems', *Journal of Industry, Competition and Trade* 9(4), 329-355

van Pottelsberghe de la Potterie B. and M. Mejer (2010) 'The London Agreement and the cost of patenting in Europe', *The European Journal of Law and Economics* 29(2), 211-237

Veugelers R. (2009) 'A lifeline for Europe's young radical innovators', *Bruegel Policy Brief 2009/01*

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