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The European patent system and the grace period

An impact analysis

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List of abbreviations

AIPPI	International Association for the Protection of Intellectual Property
AOPI	Association of Official Industrial Property Agents (Portugal)
ASPI	Association française des Spécialistes en Propriété Industrielle de l'Industrie
ASTP	Association of European Science and Technology Transfer Professionals
BDI	Bundesverband der Deutschen Industrie
CATI	Computer-assisted telephone interviews
CAWI	Computer-assisted web interviews
CEOE	Confederación Española de Organizaciones
CIPA	Chartered Institute of Patent Attorneys
CNCPI	Compagnie Nationale des Conseils en Propriété Industrielle
COAPI	Official Association of IP Agents (Spain)
CPTPP	The Comprehensive and Progressive Agreement for Trans-Pacific Partnership
CSIC	Spanish National Research Council
EAPO	Eurasian Patent Organization
EPC	European Patent Convention
EPI	Institute of Professional Representatives before the European Patent Office
EPO	European Patent Office
ESAB	Economic and Scientific Advisory Board
FEMIPI	European Federation of Intellectual Property Agents in industry
FICPI	International Federation of Intellectual Property Attorneys
FTO	Freedom-to-operate
GAPI	Offices for the Promotion of Industrial Property (Portugal)
GP	Grace period
INPI	Institute of Industrial Property (Portugal)
JPO	Japan Patent Office
KIPO	Korean Intellectual Property Organisation
OEPM	Spanish Patent and Trademark Office
PAK	Deutsche Patentanwaltskammer
PFD	Pre-filing disclosures
PROs	Public research organisations
R&D	Research and development
SMEs	Small and medium-sized enterprises
SPLH	Substantive patent law harmonisation
TTOs	Technology transfer offices
UNIFAB	Union des Fabricants
UK	United Kingdom
US	United States of America

USPTO	United States Patent and Trademark Office
VNO-NCW	Confederation of Netherlands Industry and Employers
VPP	Vereinigung von Fachleuten des Gewerblichen Rechtsschutzes
WIPO	World Intellectual Property Organization

Executive summary

The grace period was the starting point for global discussions on the international harmonisation of substantive patent law, and has remained the crux of the exercise. It is an intensely debated topic especially in Europe, since the European Patent Convention (EPC) does not provide for a grace period, but instead contains a strict novelty requirement. The purpose of this study is to inform current debates on this matter by providing an evidence-based assessment of the potential economic impact of the introduction of a grace period in Europe.

The grace period is a period of time prior to the filing date or priority date of a patent application, during which an inventor can disclose his invention without this destroying its novelty for patenting purposes. It prolongs the period of legal uncertainty (from 18 months to up to 30 months) during which the public may not be able to assess conclusively whether a disclosure forms prior art or not, thereby increasing the risk of unintentional infringement by third parties. The creation of a grace period therefore entails a trade-off between the flexibility gains it may generate for applicants and the legal uncertainty experienced by third parties as a result of its use.

There are many ways in which the grace period can be defined and used, and the international landscape in this respect is a patchwork of different regimes. Depending on the balancing mechanisms (such as declaration requirements or prior user rights) that have been established to mitigate legal uncertainty, applicants may use the grace period as a safety net to salvage patent applications in the event of accidental pre-filing disclosures, as an opportunity to accelerate scientific publications or communications, or as a convenient means to buy time to improve the invention and start promoting it prior to drafting and filing a patent application. The liberty granted to applicants to use the grace period is thus a key determinant of both the benefits and legal uncertainty that it may generate.

The present study aims to provide a fact-based, quantitative assessment of the potential economic impact of the possible introduction of the grace period in Europe. For this purpose, as a first step our analysis focuses on EPO applicants' current responses to the strict novelty requirement under the EPC. First, this data measures the magnitude of the difficulties experienced by applicants as a result of the strict novelty requirement. Second, it is used to estimate the potential baseline frequency of grace period requests for European patents should a grace period be introduced in Europe. Finally, we will analyse EPO applicants' responses to different grace period scenarios, each involving specific balancing mechanisms, to assess the frequency and origins of potential grace period requests, as well as their impact on legal uncertainty, in each scenario.

The study primarily draws on new empirical evidence collected via a broad survey of applicants who filed patent applications with the EPO in the past three years, i.e. the calendar years 2018, 2019 and 2020. This survey departs from prior studies in that it aims to collect evidence on the respondents' actual behaviour rather than their opinions or preferences. As a complement to the survey, we also consulted representative associations and federations of EPO users and stakeholders in Europe to gather further insights into systemic effects of the grace period that individual respondents in the survey may fail to grasp in full. Further relevant material has been collected through desk research and the kind provision by the Japan Patent Office (JPO) and Korean Intellectual Property Office (KIPO) of recent statistics on the use of the grace period in their respective jurisdictions.

Key findings

European EPO applicants generally manage to comply with the strict novelty requirement, although universities experience more frequent issues than other entities due to pre-filing disclosures

European companies mainly comply with the EPC novelty requirement by postponing disclosures, thereby avoiding in most cases the more serious consequences of being prevented from filing a European patent application. Only a small share of their patent applications required the postponement of disclosures (2.3%) or were prevented by pre-filing disclosures (0.8%). Although European SMEs reported a larger proportion of patent applications that required the postponement of disclosures (10.4%), the share of their applications that were prevented by pre-filing disclosures (1%) is very close to that of other European companies.

Like European companies, European research institutions most often comply with the EPC novelty requirement by postponing scientific publications or communications, thereby mitigating the risk of failed patent applications. However, universities have much higher shares of patent applications with either delayed disclosures (12.1%) or pre-filing disclosures (7.8%) than European companies. Moreover, these inventions are typically science-based, and as such present significant economic potential. This denotes an inherent tension between the need to disclose research results early in an open-science environment and the need to secure patent protection of those results in order to enable their commercialisation.

Unlike European applicants, US, Japanese and Korean companies show a higher share of applications prevented by pre-filing disclosures than of applications that were filed following the postponement of disclosures. This demonstrates a more frequent failure to comply with the strict novelty requirement under the EPC, possibly due to the use of grace periods in their national patent systems.

Table E.1

Estimated impact of the strict novelty requirement by EPO applicant category

Applicant category	% of EP applications that required the postponement of a disclosure	% of EP applications prevented by a pre-filing disclosure
European SMEs	10.4%	1.0%
Other European companies	2.3%	0.8%
European universities	12.1%	7.8%
European PROs	6.6%	3.7%
US companies	4.1%	7.2%
Japanese and Korean companies	0.4%	2.3%

The results reported in the last two columns are estimated shares of all the European patent applications filed by the respondents in the last three years.

Source: EPO survey on the grace period.

In the few cases where it occurs, failure to comply with the strict novelty requirement under the EPC may have serious economic consequences

Being prevented from filing a patent application by a pre-filing disclosure is more likely to have direct economic consequences for innovation – such as lost opportunities to develop or commercialise the invention – than the mere postponement of a disclosure until the filing of an application. Against this backdrop, a majority of respondents in each category have established disclosure policies to prevent pre-filing disclosures and their consequences.

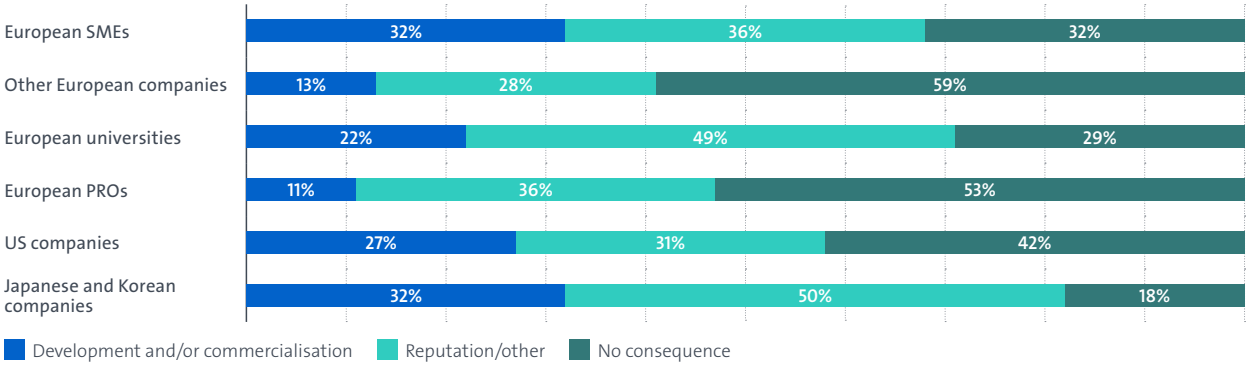
However, the impact of patent applications prevented by pre-filing disclosures varies according to applicant category. It is highest among European universities, for which 71% of failed patent applications entail lost opportunities of developing or commercialising inventions stemming from scientific research. European SMEs and Japanese or Korean respondents are also likely to experience direct economic consequences (for 60% and 61% of the patent applications that they cannot file due to pre-filing disclosures respectively). In comparison, such consequences are less frequent for larger European companies (30%) and for US companies (27%).

Figure E.1

Main consequences of postponed and pre-filing disclosures under a strict novelty requirement

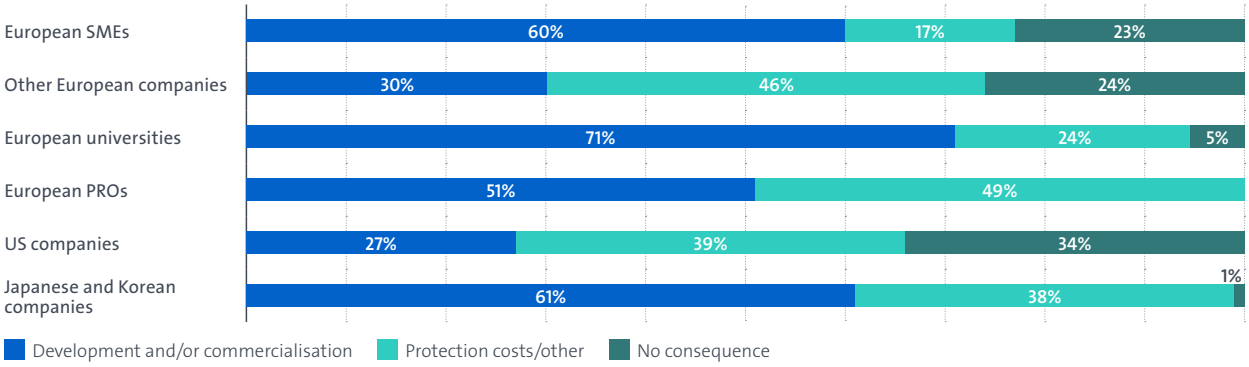
a. Main consequence of postponed disclosures

Share of patent applications that required the postponement of a disclosure



b. Main consequence of patent applications prevented by pre-filing disclosures

Share of patent applications prevented by pre-filing disclosures



The results reported are estimated shares of all European patent applications filed by the respondents in the last three years.

Source: EPO survey on the grace period

Data shows that the strict novelty requirement creates problems for applicants in approximately 10 000 cases a year. Consequently, if the EPC made provision for a grace period, the baseline potential volume of EP-application-related requests invoking the grace period can be estimated at approximately 10 000 annually. This corresponds to 6% of the European patent applications filed in 2021

Overall, the survey results suggest that there are just over 10 000 cases every year in which EPO applicants experience problems in complying with the strict novelty requirement under the EPC. These represent approximately 6% of the European patent applications filed in 2021. US applicants are involved in about half of these instances (with 5 260 cases), and European companies in another third of them (with 3 870 cases). With 840 cases, Japanese and Korean applicants account for less than 10% of problematic cases, and with 620 cases, European research institutions for only 6%.

EPO applicants typically experience problems with the strict novelty requirement in cases in which they would have invoked the grace period if it had been available in Europe. Accordingly, the number of such cases provides a baseline estimate of the potential number of grace period requests at the EPO, should a grace period be adopted in Europe. This estimated potential is equally distributed between cases in which applicants would use the grace period in order to salvage a patent application from an accidental pre-filing disclosure ("safety net"), and cases in which they would be able to comply with the strict novelty requirement by postponing a disclosure, but would prefer instead to proceed with the disclosure and invoke the grace period (pro-active use).

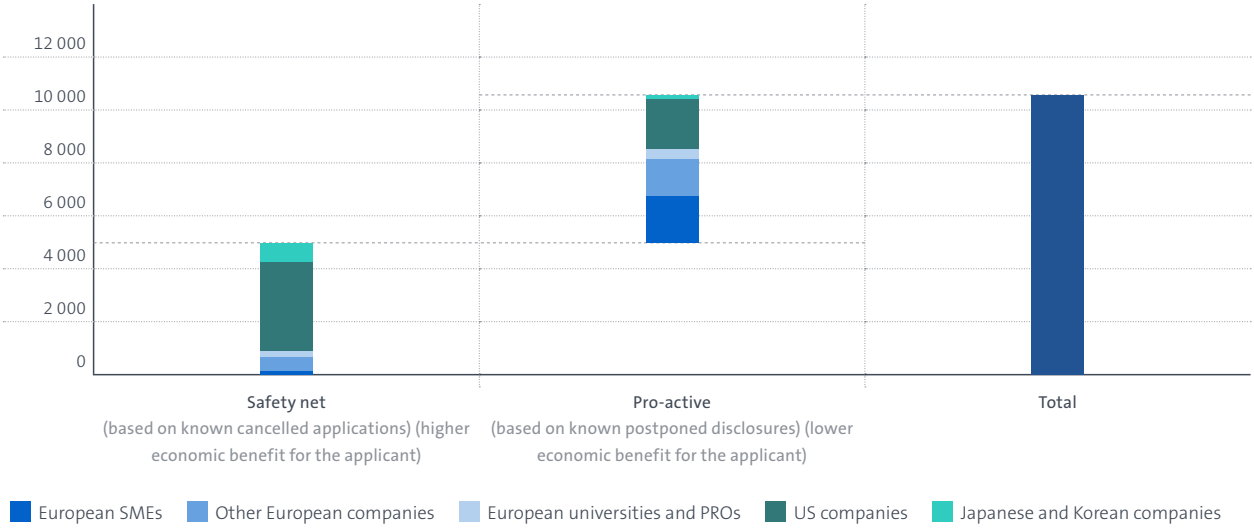
The direct use of a grace period in Europe as a safety net (i.e. where a pre-filing disclosure was not prevented, so that an application could not be filed) could concern up to 5 000 European patent applications every year, which corresponds to about 3% of all applications filed with the EPO in 2021. US applicants alone would account for about two thirds of these requests (i.e. for 3 350 patent applications), reflecting both their high exposure to pre-filing disclosures and their large share (25%) of European patent applications overall. In comparison, Japanese and Korean applicants would use a European grace period as a safety net for only about 700 patent applications (i.e. 14% of all requests), large European companies for 500 applications (10%), European research institutions for about 250 (5%) and European SMEs for about 170 (3%).

The pro-active use of a grace period as an alternative to the postponement of a disclosure could generate another potential 5 000 requests (or 3% of all applications filed with the EPO in 2021), on a par with the potential use of the grace period as a safety net. The largest share of potential uses again would lie with US companies, with about 1 900 grace period requests (34%), but European SMEs would account for a nearly equivalent share (31%) with about 1 740 requests, and other European companies for another 26% with 1 445 requests. The degree to which European companies would proactively exploit that opportunity likely depends on whether or not they would retain the discipline currently formalised in their disclosure policies, which in turn would depend on the design of the grace period and the balancing mechanisms which would be provided (see next key finding). By contrast, the potential for European universities (7%, with about 370 requests) and Japanese or Korean companies (2%, with about 125 requests) to use the grace period proactively in Europe would appear to be limited in volume compared to corporate applicants.

It must be noted that these estimates are primarily based on observations of the EPO applicants' behaviour under the strict novelty requirement currently in place under the EPC. Therefore, they do not account for further changes of applicant behaviour which might also take place should a grace period be introduced in Europe as a result of an internationally harmonised grace period. The changed legal framework providing this new option would almost certainly result in (a) changed disclosure policies, and hence also in (b) changed behaviour on the part of applicants. This would result in a higher uptake of the grace period that would be difficult to estimate. Although our methodology aims to capture such changed behaviours, it does not account for behaviours which might go beyond the mere remedying of current difficulties and involve a more strategic use of the grace period, that option becoming available, particularly since the EPC would no longer form an obstacle to the use of grace periods in foreign jurisdictions. Of course, the extent of such policy and behavioural changes would depend on the design of the grace period; hence the necessity of the survey section on different grace period scenarios.

Figure E.2

Potential impact of a grace period (in annual number of requests)



Source: EPO survey on the grace period and EPO Patent Index 2021

While an unrestricted grace period in Europe would introduce significant legal uncertainty in the European patent system, a declaration requirement and prior user rights could help preserve the balance in the system

The assessment of the issues currently experienced by EPO applicants with the strict novelty requirement suggests that the introduction of a grace period in Europe could generate economic benefits. European research institutions would for instance be in a position to use the grace period as a safety net to develop and commercialise science-based inventions, while only generating a modest number of grace period requests. However, the introduction of the grace period would also trigger a large number of potential requests that would likely increase legal uncertainty and complexity without generating such direct benefits for innovation.

The survey does not capture the impact of legal uncertainty on third parties who are not EPO applicants. Even so, by surveying users on the various scenarios we have been able to gain insights into the systemic ramifications of the legal uncertainty deriving from the increased difficulty in establishing whether a disclosure has become part of the public domain and, as such, forms part of the prior art, which would potentially impact all stakeholders in the innovation process, both applicants and third parties.

The respondents who expect significant legal uncertainty after the introduction of a grace period (Figure E.3 b) represent a proportion of European patent applications which largely exceeds the proportion of patent applications for which the grace period would likely be invoked (Figure E.3 a). This discrepancy illustrates the tension between the perceived benefits of the grace period in individual cases and its potential systemic effects. There are important differences, however, between the systemic impacts of the different grace period scenarios.

An unrestricted grace period (US model) would have the strongest impact on the balance of the European patent system. It would yield both the highest frequency of use of the grace period and the highest level of legal uncertainty as a result of that use. US companies would be the main users of the grace period (accounting for 44% of all potential requests), whereas legal uncertainty would mostly impact European companies (perceived in 65% of cases).

Against this backdrop, the introduction of balancing mechanisms would have an important deterrent effect on grace period requests. As compared with the unrestricted grace period, the share of patent applications exposed to frequent or occasional use of the grace period drops by 40% with a declaration requirement (Japanese and Korean model), and by two thirds with the availability of prior user rights (Australian model) or a safety net (combining a declaration requirement and prior user rights).

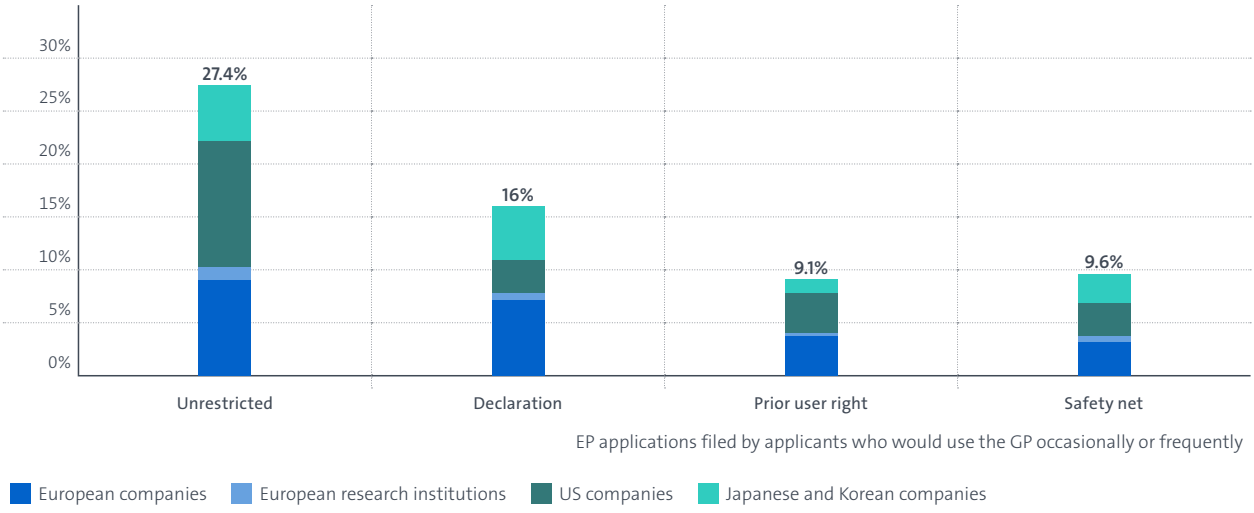
The balancing mechanisms also significantly reduce perceived legal uncertainty. EPO applicants who anticipate significant legal uncertainty as a result of an unrestricted grace period account for a majority (55%) of European patent applications. However, they become a minority (of 37% to 44% of European patent applications) when balancing mechanisms are introduced. It should also be noted that the higher uncertainty associated with prior user rights seems to reflect a bias among respondents, who tend to view legal uncertainty from the applicant perspective rather than as “third parties” exposed to the risk of infringing patents stemming from graced disclosures – even though they had been asked to assume a third-party perspective when completing the survey. As such, it actually constitutes a further deterrent to the pro-active use of the grace period.

Figure E.3

Estimated impact of four policy scenarios

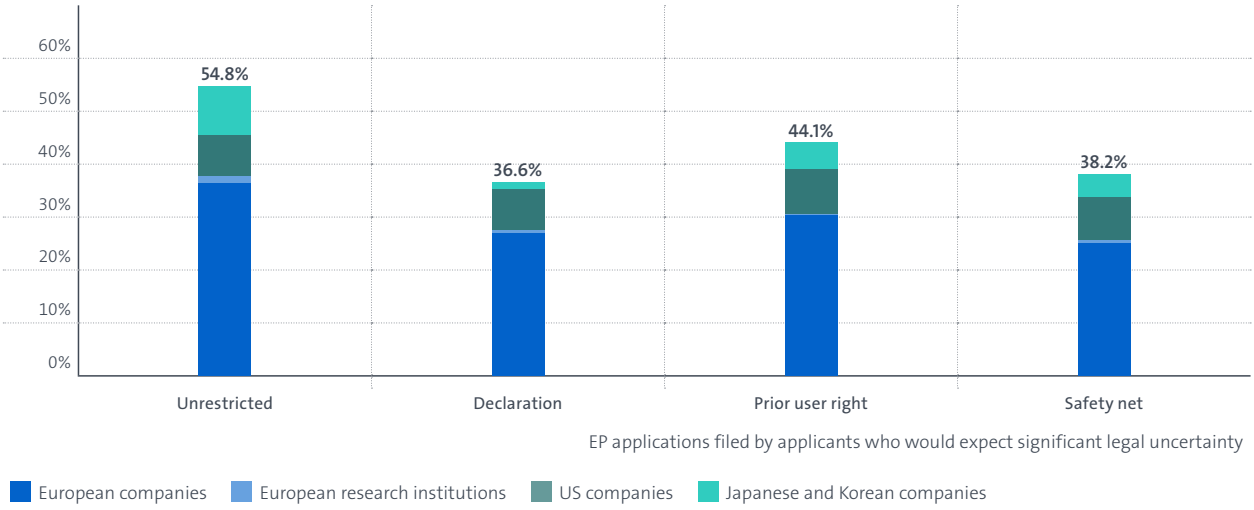
a. Frequency of use of the grace period

Share of all EP applications



b. Perception of legal uncertainty

Share of all EP applications



Note: Responses of participants are weighted by their volume of EP applications
The results reported are estimated shares of all the European patent applications filed by the respondents in the last three years. They have been calculated by using survey data as a first step to calculate, within each EPO applicant category (i) and for each scenario (j), the patent-weighted shares (Aij) of respondents reporting an occasional or frequent use of the grace period (Figure E.3 a.) or a significant level of legal uncertainty (Figure E.3 b.). As a second step, the overall share (Sij) of European patent applications for which respondents in a given category (i) report an occasional or frequent use of the grace period (Figure E.3 a.) or a significant level of legal uncertainty (Figure E.3 b.) in a given scenario (j) has been calculated by multiplying the average share Aij of those respondents within their category by the share Bi of this category of respondents in all European patent applications according to the EPO Patent index 2021 (i.e., Sij =.Aij * Bi for category I and scenario j).

Source: EPO survey on the grace period

1. Introduction

For a long time, the grace period has been the crux of global discussions on international substantive patent law harmonisation. It is a particularly hotly debated topic in Europe, since the European Patent Convention (EPC) does not provide for a grace period, but instead contains a strict novelty requirement[1] that has proven to be the one of the cornerstones of the legal certainty for which European patents are widely recognised. The purpose of this study is to inform these policy discussions with an evidence-based assessment of the potential economic impact of the introduction of a grace period in Europe.

1.1 The grace period and substantive patent law harmonisation

A grace period in patent law is a period of time prior to the filing date or priority date of a patent application during which an inventor can disclose his invention without this destroying the novelty of his invention for patenting purposes. Europe and P.R. China stand out as two major jurisdictions in the world without a full-fledged grace period encompassing any and all wilful disclosures by the inventor/applicant.

In an international context, some regard the grace period as an essential element in ongoing efforts to achieve international substantive patent law harmonisation. It is widely considered to be the key to building a global patent system, as well as one the most difficult issues to address. There have been multiple attempts to achieve an internationally harmonised grace period for several decades. Currently, substantive patent law harmonisation is being considered within "Group B+", composed of delegates from over 40 industrialised countries, the EPO and the EU.

The grace period prolongs the period of legal uncertainty (from 18 months to up to 30 months) during which the public may not be able to assess conclusively whether a prior disclosure forms prior art or not, thereby increasing the risk of unintentional infringement by third parties. Therefore, the introduction of a grace period in the patent system entails a fundamental trade-off between the gains it may generate for the applicants who use it, and the increased legal uncertainty and complexity that third parties would experience as a result of such use. Likewise, for consumers and the public there are potential advantages and disadvantages. They might benefit from the earlier development of inventions based on pre-filing disclosures and development and commercialisation of inventions in cases in which such development would have been prevented by the absence of a patent. However, they may also be indirectly impacted by the broader effects of the grace period on the operation of the innovation system – for instance if, due to legal uncertainty, a company were to decide not to pursue a certain innovation. A thorough assessment of the systemic economic impact of the grace period on both applicants and third parties is a prerequisite, therefore, to discussing the merits of its potential introduction in a jurisdiction.

The terms of the trade-off in turn strongly depend on the type of grace period being considered. There are many ways in which the grace period can be defined, and the international landscape in this respect is a patchwork of different regimes. The grace periods in the US, in Japan and R. Korea, and in Australia provide examples of how such periods can be implemented, as well as how they can differ. Depending on those policy choices, and specifically on the balancing mechanisms (such as declaration requirements or prior user rights) that have been established to mitigate legal uncertainty, applicants may use the grace period as a safety net to salvage patent applications in the event of accidental pre-filing disclosures, as an opportunity to accelerate scientific publications or communications, or as a convenient means to buy time to improve the invention and start promoting it prior to drafting and filing a patent application. The liberty granted to applicants to use the grace period is thus a key determinant of both the benefits that can be derived from the grace period by applicants, and the legal uncertainty it may generate for third parties.

1 See Article 52(1) EPC: "European patents shall be granted for any inventions, in all fields of technology, provided they are new, involve an inventive step, and are susceptible of industrial application"; Art. 54(1) EPC: "An invention shall be considered new if it does not form part of the state of the art"; Art. 54/2) EPC: "The state of the art shall be held to comprise everything made available to the public by means of a written or oral description, by use, or in any other way, before the date of filing of the European patent application". Under the EPC, non-prejudicial disclosures are dealt with by Art. 55 EPC: "For the application of Article 54, a disclosure of the invention shall not be taken into consideration if it occurred no earlier than six months preceding the filing of the European patent application and if it was due to, or in consequence of: (a) an evident abuse in relation to the applicant or his legal predecessor, or (b) the fact that the applicant or his legal predecessor has displayed the invention at an officially recognised, international exhibition falling within the terms of the Convention on international exhibitions signed at Paris [...]". Thus, the EPC does not allow applicants to disclose their invention at will and then to apply for a patent.

Finally, the introduction of a grace period in a major jurisdiction such as Europe is likely to have systemic ramifications on a global scale. Currently, global players are prevented from proactively using grace periods, presumably because the absence of a full-fledged grace period in Europe and P.R. China acts as a disincentive. Indeed, pre-filing disclosures anywhere in the world would prevent the patentability of an invention in those two markets of 600 million and 1.4 billion people respectively. Against this backdrop, harmonisation has the potential to amplify the impact of grace periods as it would ensure that innovators could file for patent protection in all regions that operate a grace period, by removing the current extra-territorial barriers to its use. This makes research into the grace period, and a survey of users of the system, a delicate matter: after all, beyond the immediate practical benefits that would be derived from a harmonised grace period for certain users, there may be potential systemic ramifications of which most users will be unaware, but which need to be considered, although they may be difficult to test for and to quantify.

1.2 Prior EPO studies on the grace period

The pressure on Europe to consider adopting a grace period and the need to ensure a full understanding of its economic effects in Europe already led the EPO to carry out a number of studies and consultations in the past.

In 2012, the Tegernsee Experts Group conducted a survey to study four areas of substantive patent law harmonisation: the grace period, 18-month publication, the treatment of conflicting applications, and prior user rights. The survey was administered by the national patent offices of Denmark, France, Germany, the UK, the US and Japan, as well as the EPO, and a total of 737 responses were collected on the grace period part of the questionnaire. Among the European respondents, 9 were national and supra-national European user associations which represented over 10 000 patent professionals and 217 000 companies across Europe. It is noteworthy that within the IP5 co-operation, the Tegernsee survey was also conducted by the Korean Patent Office among 700 of its stakeholders, yielding further data for comparison with the Tegernsee results.

Over 60% of respondents in the Tegernsee survey had at least at one point felt the necessity to file patent applications after they had disclosed their inventions. Around 38% of the pre-filing disclosures occurred through academic publication, and another 20% were accidental. Approximately 63% of European respondents (and a majority of those in the US) had invoked the grace period in the past, and in this case typically for a fraction of 0.1% to 1% of their patent applications. Against this backdrop, a majority of European SMEs, European universities and large companies in Japan and the US, but only a minority (32%) of large European companies, expressed support for the grace period.

In 2014, the EPO's Economic and Scientific Advisory Board (ESAB) analysed the economic effects of introducing a grace period in Europe. As part of this analysis, the ESAB commissioned an economic study (Europe Economics, 2014) which involved a literature survey, an on-line survey of users of the European patent system in Europe, Japan and the US, and qualitative evidence collected through structured interviews with users. The study aimed at identifying the effects of introducing a grace period in Europe on various stakeholders, including large companies, SMEs, universities and public research organisations (PROs) within and outside of Europe. It was complemented by a workshop organised by the ESAB in November 2014, the proceedings of which were published in a separate report (ESAB, 2015).

The Europe Economics 2014 study broadly confirmed the findings of the Tegernsee survey. It provided further insights into the respondents' motives for using the grace period, their concerns regarding the introduction of a grace period in Europe and their preferences as to its specific design. The study showed that whereas European respondents that already used the grace period did so because of necessity arising from human errors or breach of confidence, Japanese users did so to be the first to publish in scientific and academic journals, and US users more frequently did so to buy time for testing and improving their inventions. The study confirmed that while the majority of European SMEs (69%) and European research institutions (72%) surveyed supported the grace period, only 39% of surveyed European large companies did so.

Respondents were also asked about the legal uncertainty created by the grace period and their preferences for balancing mechanisms that could mitigate such uncertainty. A majority expressed concerns about increased legal uncertainty, as well as a preference for calculating the grace period from the filing date or priority date (90%) and for having the risk associated with pre-filing disclosures borne by the inventor or

their successor in title (66%). Overall, a majority of European respondents favoured balancing mechanisms such as a declaration requirement or prior user rights. However, large European companies generally showed stronger concerns over the protection of third parties than European universities[2] and SMEs. Japanese and US respondents showed a clear preference for the grace period designs already in place in their respective domestic jurisdictions.

The ESAB report (2015) provided further insights into the subject from an international panel of experts. It was generally agreed that one advantage of the adoption of a grace period in Europe was that it would provide a remedy for applicants in the event of accidental disclosure, and that a fully harmonised rule on a grace period (or on the absence thereof) could reduce the complexity and cost of global patenting. However, participants were unanimous that the main disadvantage for Europe in adopting a grace period would be an increase in legal uncertainty and in the cost and complexity of the European patent system. Some participants also underlined the challenge of documenting the economic impact based on a survey of the preferences of applicants, in light of the complexity of that impact and of the limited grasp of its ramifications that some applicants appear to have.

1.3 Purpose and methodology of the present study

The goal of the present study is to complement prior findings with a fact-based, quantitative assessment of the potential economic impact of the introduction of the grace period in Europe. For this purpose, the study proceeds in two main steps, each addressing a specific of set of questions:

— The first step is an analysis of EPO applicants' current experience of the strict novelty requirement under the EPC. Specifically, the analysis focuses on the ability of different categories of applicants to comply with that requirement, as well as the economic costs and benefits for them of complying or failing to comply. In short, data is collected on the frequency and extent to which the strict novelty requirement creates difficulties for applicants. Attention is also paid to the nature of these difficulties, in order to identify cases in which a direct impact on innovation may be observed[3].

— The second step is an analysis of the potential impact of the introduction of a grace period in Europe. Newly available evidence from EPO applicants' current responses to the strict novelty requirement is used to estimate the potential baseline frequency of grace period requests for European patents. Further evidence on EPO applicants' responses to different grace period scenarios, each involving specific balancing mechanisms (namely a declaration requirement, a prior user right or a combination of these two mechanisms) is then used to assess the frequency and origins of grace period requests, as well as their impact on legal uncertainty, in each scenario.

In conducting these analyses, the study primarily draws on new empirical evidence collected via a broad survey[4] of applicants who have filed patent applications with the EPO within the past three years (2018–2020). To a large extent, the survey questionnaire draws on the insights generated by past studies conducted by the EPO and other organisations. However, it departs from prior studies in that it aims, insofar as possible, to collect evidence on actual past behaviour of the respondents rather than their opinions or stated preferences. The survey has in particular been designed to enable an assessment of the number of applications filed by each respondent in the past three years. It thereby makes it possible to produce estimates of the responses of various categories of respondents (namely European SMEs, large companies and research institutions, as well as US, Japanese and Korean companies) to the strict novelty requirement or grace period scenarios in terms of number of patent applications at the aggregate level.

2 On the part of universities, this is not surprising as they are usually not involved in manufacturing activities, and thus unlikely to require the protection of prior user rights, but may have such rights invoked against them.

3 Advantages of the grace period for the public and consumers may indeed relate to the earlier development of inventions based on pre-filing disclosures or the development and commercialisation of inventions in cases in which such development would have been prevented by the absence of a patent. By focusing on the difficulties EPO applicants face when dealing with the existing strict novelty requirement in Europe, the methodology used in the study mainly aims to assess the frequency of such instances. As a result, it may overlook some other advantages and drawbacks of the grace period.

4 More than 1 100 EPO applicants have been interviewed for this survey, including 282 research institutions and 823 companies in Europe, the US, Japan and R. Korea. Fieldwork started in September 2021, first with pilot interviews to test the questions with real respondents. Most of the interviews were conducted in the first months of 2022. The fieldwork period was closed on 8 March 2022. See Annex 1 for more information on the survey methodology.

We also chose to focus the analysis on the impact of a limited number of policy scenarios mirroring existing grace period models in selected major jurisdictions (such as the US, Japan, R. Korea and Australia), rather than testing the isolated impact of specific balancing mechanisms or design features of the grace period. This holistic approach offers the advantage of facilitating impact assessments at the aggregate level. However, it also requires some degree of simplification in the definition of the respective grace period scenario, ignoring some important dimensions of grace period design, such as the duration and the critical dates framing the grace period.

The survey methodology also remains subject to some general limitations, pertaining in particular to the ability of EPO applicants to correctly and fully anticipate the potential ramifications of a European grace period. In order to address such limitations, the survey was complemented by a consultation of representative associations and federations of EPO users and stakeholders in Europe. The contributions eventually made by 17 such organisations provide valuable insights into systemic effects of the grace period that may not be perceived by all applicants. Further relevant materials have additionally been collected through desk research and the kind provision by the Spanish Patent and Trademark Office (OEPM) and Portugal's Institute of Industrial Property (INPI) of additional survey data on the grace period, and by the Japan Patent Office (JPO) and Korean Intellectual Property Office (KIPO) of recent statistics on the use of the grace period in their respective jurisdictions. While the main focus of the impact assessment is on Europe, we have also reviewed the operation of the grace period in other jurisdictions and discuss possible implications of the introduction of a European grace period in these jurisdictions in the conclusion.

1.4 Structure of the report

The following part of the report is organised in three sections.

Section 2 provides a review of available evidence on the motives for using the grace period, its economic impact and the frequency at which it is used in jurisdictions where it exists. It lays out the conceptual framework that is used in the subsequent sections of the report to analyse the motives for EPO applicants to use the grace period, and the economic impact of such use for EPO applicants and third parties.

Section 3 presents the results of the part of the survey dealing with the current responses of EPO applicants to the strict novelty requirement under the EPC. By documenting the disclosure policies that applicants have put in place and their effects on the actual disclosure of inventions and patent applications, this section enables a first assessment of the impact of the absence of a grace period in Europe.

Section 4 presents an assessment of the potential impact of the introduction of a grace period in Europe. The potential for using the grace period in Europe is first quantified based on available information about EPO applicants' experience of the strict novelty requirement under the EPC. Additional survey data are then used as a second step to compare the impact of different balancing mechanisms on the uptake of the grace period and the legal uncertainty that it may generate.

2. Review of available evidence on the grace period

This section reviews the corpus of available evidence on the motives for using the grace period, its economic impact and the frequency at which it is used in jurisdictions where it exists. The sources that have been reviewed include studies and surveys, contributions from representative EPO user associations collected for the purpose of this study and statistics shared with the EPO by the Japan Patent Office (JPO) and the Korean Intellectual Property Office (KIPO). On this basis, the section lays out the conceptual framework that will be used in the rest of the report to analyse the motives for EPO applicants to use the grace period, and the economic impact of such use for EPO applicants and third parties.

2.1 What is the grace period?

For an invention to be patentable under the EPC, it must – among other things – be new. This means that any disclosure of an invention to the public before the filing date of the patent application or its priority date will destroy the novelty of the invention and, hence, its patentability[5]. Thus, Europe enjoys a high degree of legal certainty, clarity and efficiency, both pre- and post-grant, which simplifies matters for third parties and patent offices alike. The downside is that voluntary disclosures by the inventor cannot be envisaged, and no patent protection can be obtained in cases of accidental disclosure of an invention.

In contrast, a grace period allows for a period of time before an application's filing date or priority date during which an invention can be disclosed to the public without such disclosure being prejudicial. For example, in a country with a grace period, an inventor may disclose their invention in a scientific publication, during field tests, at a conference or a trade show or simply by accident without the invention losing its novelty, so that it remains patentable. The disclosure is thus considered "graced".

At present, grace periods are available in many patent systems around the world, including in particular the US, Canada, Japan, R. Korea and Australia. A grace period is also available to some extent under the national patent law of some member states of the EPC (see Box 1). There are important differences, however, in the design of the grace periods in different countries. Those differences concern the length of the grace period, for instance. While 12 months is standard in many jurisdictions (as well as in free trade agreements), some countries retain a 6-month duration.[6] The date from which a grace period is calculated may also differ: this is either the actual filing date of the application or its priority date.[7] Furthermore, some jurisdictions have various mechanisms to ensure that the grace period is used only as an exception, rather than systematically or strategically. In this chapter we will discuss these differences in further detail, after presenting the applicants' motives for using the grace period.

Like Europe, P.R. China stands out as a major jurisdiction without a full-fledged grace period encompassing any and all wilful disclosures by the inventor/applicant. Article 24 of the China Patent Law[8] is broader in scope than Art. 55 EPC[9] in that the grace period, in addition to the situations contemplated by Art. 55 EPC, applies to disclosures made at "prescribed academic or technological meetings". In 2020, in the wake of the pandemic, the grace period was further expanded to encompass situations where an invention is disclosed for the first time to serve the public interest when a state emergency or an extraordinary situation occurs in the country. Thus, in P.R. China, as under the EPC, the circumstances of the disclosure require scrutiny in order

5 As mentioned, Art. 55 EPC provides very limited exceptions pursuant to which, after disclosure of the invention, an applicant may still obtain a valid patent under the EPC: where the disclosure is a result of an evident abuse in relation to the applicant, or where it occurs at an officially recognised international exhibition. As these cases are extremely rare, it is very easy to determine whether or not a document is comprised in the prior art, provided it is dated.

6 Certain Aspects of National / Regional Patent Laws, WIPO, October 2021 https://www.wipo.int/export/sites/www/scp/en/national_laws/grace_period.pdf. While extremely useful, this document must nevertheless be consulted with circumspection, as this iteration contains some inaccuracies, for instance, when it indicates that Albania and Malta have full-fledged national grace periods.

7 Study mandated by the Tegernsee Heads on the grace period, 2012, p.46. See also Box 3 below.

8 See Article 24 of the China Patent Law: "An invention-creation for which a patent is applied does not lose its novelty where, within six months before the date of filing, one of the following events occurred: (1) where it was disclosed for the first time for the purpose of public interest when a state emergency or an extraordinary situation occurs in the country; (2) where it was first exhibited at an international exhibition sponsored or recognised by the Chinese Government; (3) where it was first made public at a prescribed academic or technological meeting; (4) where it was disclosed by any person without the consent of the applicant".

9 See footnote 1 above.

to determine whether they can constitute non-prejudicial disclosures. In most other systems, the operation of the grace period simply removes from the prior art the item disclosed by the applicant during the grace period and there is no need to analyse either the content or the circumstances of the disclosure.

Box 1: Grace period systems in EPO member states

The national patent legislation of four EPC Contracting States provides for a national grace period. This is unproblematic, as the EPC novelty requirement is thereby stricter than that in the national law of these States, so that any patent granted by the EPO will be valid under their law. Estonia, Latvia and Turkey have a 12-month grace period, and San Marino applies a 6-month grace period, all calculated from the filing date or, if applicable, the priority date.

In **Estonia**, § 8(3) of the Estonian Patents Act provides for a grace period for disclosures made by the person entitled to apply for a patent, or by a third party with that person's consent. A declaration must be filed with the application or not later than two months prior to the publication of the application (i.e. within 16 months of the filing/priority date of the application). If knowledge of the invention was acquired unlawfully, or if the disclosure was made unlawfully or without the knowledge of the person entitled to apply for a patent, the request for the grace period to apply may be made throughout the granting process and post-grant if the validity of the patent is contested.

According to statistics kindly provided by the Estonian Patent Office, between 2004 and 2019, 18 patent applications invoked the grace period, from a total of 898 applications filed nationally,[10] either by way of a domestic application or through the PCT during that period.

Table 2.1

Type of applicant and number of applications invoking the grace period

Type of applicant	Number of applications
Academic institutions	8
Pharmaceutical companies (foreign)	5
SMEs (domestic)	4
Individual inventor	1

Source: Estonian Patent Office (2022)

In **Latvia**, pursuant to Art. 2 of the Latvian Patent Law, the grace period covers disclosures made by the inventor/applicant or a third party who has obtained the invention from the inventor, as well as disclosures made by the Patent Office in cases when information is disclosed in another application filed by the same inventor which should not have been disclosed; or in an application filed by a third party having obtained the invention from the inventor, without the inventor's knowledge or permission. The grace period may be invoked at any time. There is no declaration requirement, but the burden of proof that the conditions of application of the grace period are fullfilled rests with the applicant.

In **San Marino**, Art. 3(4) of Law No. 79 of 25 May 2005 (the Industrial Property Consolidation Act) provides that for the purpose of determining the novelty of an invention, any disclosure to the public of the invention shall not be taken into consideration if *"it was due to, or in consequence of, related actions by the applicant or his legal predecessor or a related abuse by a third party in respect of the applicant or his legal predecessor"*.

Finally, in **Turkey**, according to Art. 84(1) of the Intellectual Property Code, disclosures do not affect the patentability of an invention if they were made by the inventor or by a third party having obtained the information directly or indirectly from the inventor, or if published by an office, when the information was contained in another application filed by the applicant which was published although it should not have been, or in an application filed by a third party who obtained the information directly or indirectly from the inventor without their permission.

2.2 Motives for using a grace period

The applicants' motives for using a grace period have already been explored and documented in a relatively large number of surveys and consultations. Among those, the report prepared by Europe Economics for the EPO ESAB in 2014 is of particular interest to the present study, because it focuses on EPO applicants. Available evidence consistently shows that the reasons for using the grace period are diverse and may vary between categories of applicants and between countries (depending on the rules underlying the respective national grace period systems). For the purpose of this study, those reasons can be classified in three main categories: a safety net for

10 See https://www.epa.ee/en/office-news-contact/patent-office/statistics

accidental disclosure, the early disclosure of results from scientific research, and proactive use of the flexibility offered by the grace period for business purposes.

2.2.1 A safety net for accidental disclosure

One of the major justifications for the grace period is to provide a safety net for accidental disclosures of new inventions. Such accidental disclosures can arise through breaches of confidence or may be due to a lack of awareness of patent law, or to imperfect disclosure policies or information flows within companies. Their direct impact is that they make it impossible to successfully file a patent on the disclosed invention, resulting in the loss of patent protection as a means to support the development and commercialisation of the invention.[11] Accidental disclosures may also prompt competitors to file applications for similar inventions, which presents a substantial risk to inventors, in particular if large investments have been made.[12]

According to the survey conducted by Europe Economics, accidental disclosure is the most important motivation (49%) for invoking the grace period (Figure 2.1) among European users of the European patent system. However, the survey results show that a number of other motives also need to be taken into consideration, such as early publication of scientific results (15%) and pro-active use of the grace period for various business purposes (32%). Also note that the proportion of respondents that mention the use of the grace period "out of necessity" is lower in the US (27%) and Japan (32%) than in Europe, suggesting differences in their respective conceptions of the grace period system and its function.

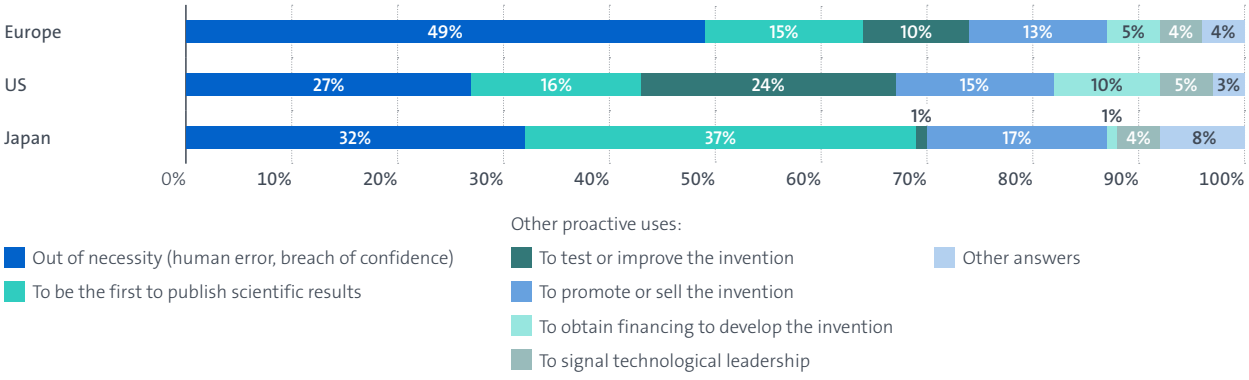
2.2.2 Early disclosure of scientific research

Another important motive for using the grace period pertains to the "facilitation of technology transfer and dissemination of information"[13] through early disclosure of results from scientific research. Researchers striving to advance technology frontiers typically work in an open environment, in which they have strong professional incentives to publish new results or present them at conferences as quickly as possible.[14] However, universities and public research organisations (PROs) also need to secure patent protection on results that present potential for commercial applications and technology transfer. Under the EPC's strict novelty requirement, this means that researchers have to embargo their research results until a first patent application has been filed.

The resulting trade-off between a researcher's incentive to quickly publish results and their employer's intent to patent is frequently reported as a problem for technology transfer offices in Europe, leading to the loss of patenting opportunities for science-based inventions that may have significant commercial potential, and to reluctance

Figure 2.1

EPO applicants' motivation for using the grace period by region



The results are based on an on-line survey among users of the European patent system in Europe, the US and Japan.

Source: Europe Economics (2014), EPO

11 The Debate Regarding the Grace Period in International Patent Law: A Reminder, Emmanuel Roucounas, 2006, ALLEA
12 Patent Harmonisation: US and UK Study on Grace Periods, 2015, The Intellectual Property Office, p.28
13 FICPI White Paper on Grace Period, 2013 https://ficpi.org/system/files/FICPI-WP-2013-01Grace-Period.pdf
14 Study mandated by the Tegernsee Heads on the grace period, 2012, p.10

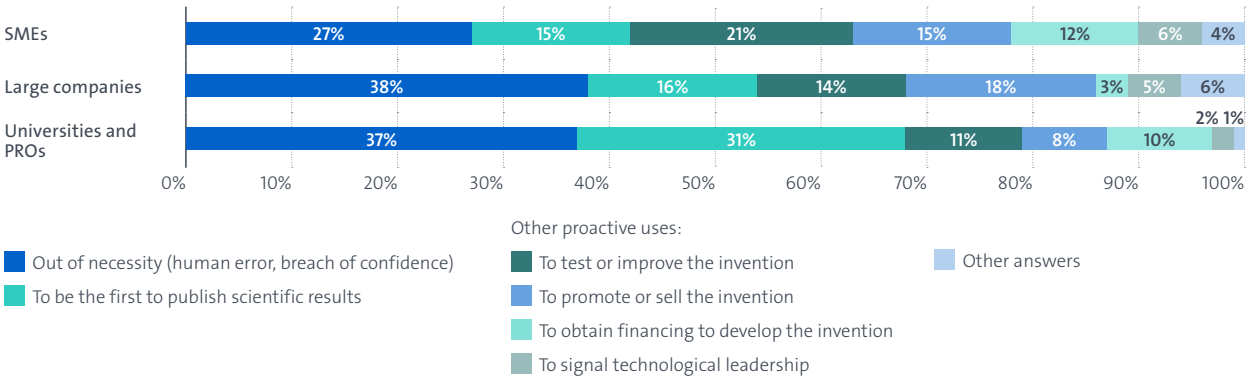
among researchers to engage in valorisation activities.[15] For instance, in a survey by the Science Business Innovation Board, over half of European academics ticked "often" or "very often" when asked whether premature public disclosure had meant that their invention could not be protected by a patent.[16] By contrast, patent systems with a grace period are compatible with both the early disclosure of results and the filing of a patent.[17] One participant in the current consultation for this study[18] also argued that the extra time available post-publication provides scope for preparing a better-quality patent application (perhaps even with added data) and may thereby increase the usefulness of such patent applications to commercial partners.

Against this backdrop, in various reports[19 20 21] universities and PROs were found to express the highest level of support for the grace period across all organisations. In the Europe Economics survey, 31% of universities and PROs mentioned the rapid disclosure of scientific results as their main motivation for using the grace period (Figure 2.2). Interestingly, a significant share of SMEs (15%) and large companies (16%) also mentioned this motive. A possible explanation for this is the increasing importance of research collaboration between industry and universities, which may require non-confidential communication in the early stages of an engagement between parties[22], and start-ups or SMEs may use publications as an alternative to contract research to draw the interest of their academic partners.[23]

Turning back to geography and the differences between national grace period systems (Figure 2.1), it is also worth noting that early publication of scientific results seems to be much more important for Japanese respondents than for their European and US counterparts. Up to 37% of respondents in Japan mention it as the main motive for using the grace period, compared with 15% of European respondents and 16% of US respondents.

Figure 2.2

EPO applicants' motivation for using the grace period by applicant category



The results are based on an on-line survey among users of the European patent system in Europe, the US and Japan.

Source: Europe Economics (2014), EPO

15 Contribution of ASTP, 2022
16 Science | Business Innovation Board AISBL. (2014) A grace period for patents. Could it help European universities innovate?
17 The grace period in international patent law and its effect on the timing of disclosure, Franzoni & Scellato, 2010
18 Contribution of ASTP, 2022
19 Consolidated report on Tegernsee User Consultation on substantive patent law harmonisation, 2014
20 Patent Harmonisation: US and UK Study on Grace Periods, 2015. The Intellectual Property Office
21 OEPM (2021) survey on the grace period
22 Contribution of VNO-NCW, 2022
23 Contribution of BIO Deutschland, 2022

Box 2: Accelerating knowledge diffusion through early disclosure

A number of academic studies have analysed the impact of the early disclosure of inventions on the diffusion of scientific knowledge.

Okada and Nagaoka (2020)[24] studied the impact of the introduction of the publication of applications at 18 months from the filing/priority date in the US in 2000, which previously had only published granted patents. They found that the probability of citation of the invention by third parties rose significantly in the stage following publication of the application, which showed that the reform accelerated knowledge diffusion significantly. Furthermore, the effect was stronger in the fields with longer publication lags before the reform (strongest in Computers & Communications, followed by Drugs and Medicals). According to the authors, the reform seems to have helped inventors to recognise potential duplication and follow-on invention opportunities earlier. In addition, the publication of patent applications that were eventually abandonded and had not been published before the reform was found to have become a significant new source of knowledge.

Two of these studies focused more specifically on the role played by the grace period in the Japanese and US patent systems.

Nagaoka and Nishimura (2015)[25] specifically examined the determinants of the use of the grace period in Japan and its effects on knowledge flows. Their results indicated that the use of the grace period was more frequent for inventions with strong science linkages and in high-tech sectors, and among academic inventors. The use of the grace period was also found to increase knowledge diffusion to third parties as measured by non-self forward citations, relative to self-citations.

Franzoni and Scellato (2010)[26] assessed the impact of the grace period using matched pairs of scientific articles and related academic patents in the US and Europe. Out of 299 patents with an academic origin that were first filed with the USPTO, they estimated that 27.4% used the grace period, while the majority of patents (72.6%) were not disclosed to open science before filing. Interestingly, they also found that USPTO patents were more quickly followed by a scientific publication even when no grace period had been used. Their results show that, on average, the inventions disclosed in USPTO domestic patents are published in scientific publications 2.8 months after filing, compared with an average 16.2 months after filing for inventions in EPO patents. However, the estimated delay increases to 9.9 months on average for US patents for which patent family members have been filed abroad, suggesting that the stricter novelty requirement in Europe creates an incentive for US universities to delay scientific publications.

2.2.3 Other proactive uses of the grace period

There are a variety of other motives for using the grace period. Importantly, all of them to some degree involve a deliberate and proactive use of the flexibility offered by the grace period to derive ad hoc benefits for the applicant.

While patent applicants typically have a strong incentive to file a patent application as early as possible in order to secure a priority date, they also face an opportunity cost in doing so since the value or exact scope of the invention may not be fully clear to them at the moment of filing.[27] [28] The grace period offers them an opportunity to reduce that cost, by allowing for a delay between the date of disclosure and the moment when the patent application can be filed.[29]

The Europe Economics survey provides insights into how applicants may be using this flexibility. It shows that the delay between disclosure and application can in particular be exploited to test and improve an invention, or to engage in market screening and promotion activities, prior to filing the patent application. Other similar but less frequently cited motives include the search for funds to develop the invention and the signalling of technology leadership.

The results of the Europe Economics survey suggest that these motives, as a group, are especially important for companies, and for small ones in particular (Figure 3.2). Specifically, they are cited by more than half (54%) of SMEs, 40% of large companies and 31% of universities. The relative importance of these motives also varies depending on the country of the respondent (Figure 3.1). The proactive, deliberate use of the grace period is mentioned especially by US respondents (51%), but more rarely by European and Japanese respondents (32% and 22% respectively), once again suggesting different experiences and understandings of the grace period in these countries.

24 Okada, Y., Nagaoka, S. (2020) Effects of early patent publication on knowledge dissemination: Evidence from U.S. patent law reform. Information Economics and Policy, 51.

25 Nagaoka, S., Nishimura, (2015) Use of Grace Periods and Their Impact on Knowledge Flow: Evidence from Japan. RIETI Discussion Paper Series 15-E-072

26 Franzoni, C., Scellato, G. (2010) The grace period in international patent law and its effect on the timing of disclosure, Research Policy 39

27 The Debate Regarding the Grace Period in International Patent Law: A Reminder, Emmanuel Roucounas, 2006, ALLEA

28 Dechezleprêtre et al. (2017) International patent families: from application strategies to statistical indicators. Scientometrics 111 (2), 793-828

29 Use of Grace Period and its Impact on Knowledge Flow: Evidence from Japan, Nagoaka & Nishimura, 2014, p.12

30 Economic Analysis of the Grace Period, Europe Economics, 2014, p.2

31 A review of these arguments can be found in the Study Mandated by the Tegernsee Heads on the Grace Period (2012) and in the Summary Report (2014) of the workshop of the EPO Economic and Scientific Advisory Board (ESAB) on the economic effects of introducing a grace period in Europe.

Note however that such use of grace periods undermines their expected benefits in terms of accelerated circulation of knowledge, as it then takes longer for new inventions to enter the public domain.[30]

2.3 Systemic effects of the grace period

While a grace period may benefit patent applicants who use it, it also impacts third parties and the operation of the patent system as a whole. These indirect effects are often perceived as negative and therefore cited as arguments against the grace period.[31] Because they are typically diffuse and of a systemic nature, these effects are also more difficult to characterise and quantify. Understanding these issues is nonetheless of the utmost importance in assessing the overall legal and economic impact of a grace period system.

2.3.1 Legal uncertainty

In a first-to-file patent system without a grace period, a patent will not be granted if there has been a pre-filing disclosure. Third parties and the public are nevertheless exposed to a period of uncertainty of up to 18 months between a post-filing disclosure and the publication of the patent application. Introducing a grace period implies an extension of that period of uncertainty to up to 30 months regarding whether any disclosure may at a later stage be graced and the corresponding invention subject to patent protection.[32] As compared with a strict first-to-file system, grace periods therefore structurally reduce the transparency of the patent system in order to favour the interests of inventors/applicants, while creating legal uncertainty for third parties and potentially putting at risk their own investments in innovation, thus arguably disincentivising innovation.

Specifically, the availability of a grace period, which may result in a delay in filing, thereby opens up the possibility that others publish similar solutions, alternatives or improvements or begin to use the invention during that period.[33] This introduces the first difficult question of *whether third parties should have the right to use their own derived version of the invention.* When similar inventions have been developed and published independently of the graced disclosure, it also makes it difficult to determine which prior art is graced and *which prior art can still be cited against the patent application,* thereby creating legal uncertainty for the applicant using the grace period as well as for third parties whose activities may fall within the scope of the patent.[34] Equally problematic in this age of the Internet and instant communication is that the longer it takes for an application to be filed after a pre-filing disclosure, the more likely it is that third parties having learned of the invention through the pre-filing disclosure will re-disclose the invention. This may make it difficult to determine whether a re-disclosure by a third party is in fact derived from the applicant and should thus be graced, or whether it describes an independent invention developed by that third party, in which case it would form part of the prior art.

Jurisdictions which provide for grace periods have developed different responses to these questions. Some of them in particular have implemented safeguards and mechanisms to mitigate uncertainty, each of which leads in effect to a different allocation of legal risks between the applicant and third parties (Table 2.1):

— An **extensive grace period** such as that in the US prioritises legal certainty for the applicant who has invoked the grace period, whereas third parties bear all the associated risks. In this case, where an applicant first discloses an invention and then files an application, the disclosure in that interval of an independent third-party invention which is identical to the applicant's invention may not be regarded as novelty-destroying. Thus, use by third parties of their own invention may infringe the resulting patent, particularly since prior user rights cannot arise during the grace period, even for third parties who have made an invention independently without reliance on information derived from the applicant.[35] Applicants therefore enjoy additional protection, beyond the main effect of the grace period that their disclosures are graced and do not constitute prior art vis-à-vis their later application. This has led some to argue that it renders the effect of pre-filing disclosures akin to that of a priority right which puts them in a position to make maximum use of the flexibility offered by the grace period. Third parties using derived inventions are also exposed to a systemic risk of unintentional

32 Contribution of UNION-IP, 2022

33 Study Mandated by the Tegernsee Heads on the Grace Period, 2012, p.41

34 Contribution of EPI, 2022

35 But whose prior use of the invention did not take place early enough, i.e. one year prior to the first pre-filing disclosure or one year prior to the filing or priority date, whichever is earlier; see 35 USC § 273(a)

infringement. In addition, the existence of prior disclosures which are nonetheless not part of the prior art – some of them not even emanating from the applicant – may make the drafting of freedom-to-operate opinions significantly more complicated and thus more costly. As far as we are aware, all other national grace period clauses provide that intervening disclosures of independent inventions by third parties are novelty-destroying.

— Australia is an example of a country with a grace period which uses **prior user rights** to protect the interests of third parties. The implementation of the prior user right can be subject to various design options[36], all of which impact the balance of rights between the graced applicant and the third party. Depending on these features, part of the legal uncertainty may be shifted from third parties to applicants using the grace period, leading the latter to choose to use it only when there are good reasons to do so. This is the case in Australia, where the prior user right can be obtained by third parties acting in good faith that engage in qualifying activities. Such activities may be based on knowledge of an invention gained as a result of that invention having been made public prior to filing by the applicant or with his consent, which invention is then considered to be in the public domain. These third parties can then continue using the invention after the patent has been granted, although their flexibility to do so may be limited by the existence of the patent.
The availability of prior user rights for third parties under such conditions means that applicants are advised to use the grace period only when they have a compelling reason to do so, rather than as a baseline strategy. On the other hand, the Australian system does not have a declaration requirement.

— Other countries like Japan or R. Korea focus on the issue of eligible prior art by requiring patent applicants to file a **declaration** stating when and how information about their invention was made available to the public. By consulting the patent office file, any third party can quickly check whether a pre-filing disclosure is graced, in which case it does not affect the validity of the patent. This information remains relevant after the patent has been granted. Where a pre-filing disclosure emanating from the applicant is not listed in the declaration, it is simply not graced. In effect, such a declaration system helps to reduce the legal uncertainty pertaining to prior art that can be cited against the patent derived from the graced disclosure. However, unlike Australia, these countries provide that prior user rights cannot accrue where knowledge of the invention has been derived from the applicant, for instance through a pre-filing disclosure. Thus the emphasis is rather on ensuring legal certainty when the grace period Is invoked, rather than on reducing the number of instances in which it will be used.

— Finally, the so-called **safety net** scenario which has been considered for a European grace period in the context of the discussions on SPLH would combine a declaration requirement and prior user rights.[37] This model would endeavour to ensure maximal safeguards for third parties while minimising applicants' incentives to use the grace period.

It should be emphasised that none of these mechanisms (nor any combination thereof) suffices to entirely remove the legal uncertainty that is inherent to grace periods. Other than clarifying the distribution of risks between users of the grace period and third parties, their main mitigation effect actually stems from the erosion of the benefits that applicants can derive from a grace period. By deterring proactive use of the grace period, they reduce the number of cases in which the grace period is invoked, thereby reducing the level and impact of legal uncertainty. The duration of the grace period is another important factor driving the extent of its usage, and therefore has an impact on the legal uncertainty introduced into the system (see Box 3).

36 Study Mandated by the Tegernsee Heads on the Grace Period, 2012, p.75
37 See the definition given by European users in the Tegernsee Consolidated Report, p.33, § 96

Box 3: Complexities not addressed by the study: duration and calculation of the grace period

Existing grace periods have a duration of either 6 or 12 months. In R. Korea and Japan, the national grace periods had a 6-month duration, but they switched to a 12-month duration in 2012 and 2018 respectively after signing free-trade agreements. The Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP), a free-trade agreement between Australia, Brunei Darussalam, Canada, Chile, Japan, Malaysia, Mexico, Peru, New Zealand, Singapore and Vietnam, provides for a 12-month grace period. Thus, the trend is towards a 12-month grace period among jurisdictions which already have one.

There are also some jurisdictions that have a 6-month grace period, such as Egypt, Israel, Indonesia, Tadjikistan, Uzbekistan and the EAPO. In addition, the provisions on non-prejudicial disclosures in jurisdictions without a full-fledged grace period usually also prescribe a 6-month duration, such as Art. 55 EPC, the national law provisions of the majority of EPC Contracting States and Art. 24 of the China Patent Law. This duration is widely perceived to contribute to legal certainty. It has been observed in R. Korea that when the grace period switched from a 6 to a 12-month duration in 2012, its use strongly increased in the first year and continued to accelerate after that (see Figure 2.6 infra).

Grace periods may be calculated from the filing date or priority date of the application, as in the US, or from the filing date only, as in Australia, Canada, R. Korea and Japan (note that most jurisdictions having limited provisions on non-prejudicial disclosures, such as the EPO, most EPC Contracting States and P.R. China, also calculate the duration from the filing date). The critical date has an impact on the use of the grace period and its interaction with the priority period.

Where the grace period is calculated from the filing date or, where applicable, the priority date, the applicant can make a pre-filing disclosure, use the full duration of the grace period and then enjoy the full 12-month priority period, so that second applications claiming priority from the first application may be filed up to 24 months after the first pre-filing disclosure and still benefit from the grace period. In effect, this gives applicants an additional year of protection for their invention.

However, if the grace period is calculated from the filing date, the applicant cannot enjoy both the full 12-month duration of the grace period and the full term of the priority period, since it does not suffice to file a first priority application within the 12-month grace period: all subsequent applications claiming priority from that first application, but for which the grace period is intended to be invoked, must also be filed within the 12-month (or 6-month, as the case may be) grace period for such countries. Thus, the applicant cannot use the full term of the priority period. On the other hand, the advantage of such a rule is that if the priority claim is found to be invalid, the subsequent application will not be affected, as the grace period will still apply to the pre-filing disclosure and any intervening disclosure by the applicant in between.

Table 2.2

Examples of balancing mechanisms

Examples	Disclosures of independent inventions by third parties are novelty destroying	Strict declaration requirement	Third parties acting in good faith may acquire prior user rights when knowledge of invention derived from applicant
US	No	No	No
Japan, R. Korea	Yes	Yes	No
Australia	Yes	No	Yes
Safety net (European Tegernsee definition)	Yes	Yes	Yes

2.3.2 A more complex patent system

The legal uncertainty created by the grace period translates into an extra layer of complexity of the patent system, impacting applicants and third parties as well as patent offices. A grace period renders search and examination more complicated during the patent granting process, with potentially more time being required to determine whether third-party disclosures form part of the prior art. Operating a system with a grace period also means that the patent office may have to ascertain the origin of the disclosure, in order to determine whether it emanates from or is derived from the applicant, and is thus graced, or whether it emanates from a third party and thus constitutes prior art. Applicants and examiners also have to pay extra

38 Study mandated by the Tegernsee Heads on the Grace Period, 2012, p.49
39 Contribution of CEOE, UNION-IP, 2022
40 Consolidated Report on Tegernsee User Consultation on Substantive Patent Law Harmonization, 2014, p.23

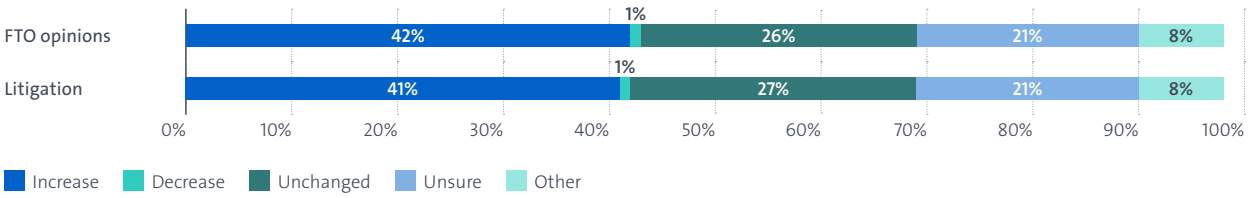
attention to the critical dates determining such eligibility. The increased complexity of search and examination is likely to undermine the operational efficiency of the patent office, with additional communications becoming necessary between the examiner and the applicant, potentially resulting in lengthened procedures and increased costs.[38]

Similar complications may increase the legal costs for all parties involved at other stages of business activities, including freedom-to-operate (FTO) analyses, opposition procedures or infringement and invalidity actions.[39] The results of the Europe Economics survey show, for instance, that more than 40% of respondents expect a grace period to increase the costs of FTO opinions and litigation, as opposed to 1% who expect those costs to decrease (Figure 3.3). Specifically, the impact on litigation may result in both higher costs per case (due to higher complexity) and more frequent litigation (due to higher legal uncertainty). In any event, the quality and speed of business decisions may be affected, leading to a negative economic impact.

Some of the user associations consulted for this study pointed out that the need to manage such complications is a significant issue especially for those applicants, like SMEs[40], who would expect a grace period to make obtaining patent protection easier, when in fact it puts on them the additional administrative burden of monitoring both their disclosures and the filing deadline they have to meet to benefit from the grace period.[41] While a declaration requirement could improve legal certainty and simplify the communication process between the applicant and the patent office, it has also been noted that it could create a further administrative burden in the patenting process.[42] In this context, several user associations underlined that the best course of action remains to file first before disclosing, even if there is the option of a grace period.[43] Accordingly, they consider it important in any case to increase awareness and promote best filing practices by educating inventors or potential applicants.[44]

Figure 2.3

Expected impact of a grace period on costs



The results are based on an on-line survey among users of the European patent system in Europe, the US and Japan.

Source: Europe Economics (2014), EPO

41 Contributions of CNCPI and CEOE (2022). In its contribution to the consultation, EPI (2022) also notes that it cannot be "expected that one who is not able to file a patent application before deliberately publishing will be able to monitor deadlines that will need to be met in order to utilise the grace period". The current system is considered easier to explain to non-specialists (VNO-NCW, CNCPI, FEMIPI, 2022) and simpler to deal with, particularly for SMEs and research institutions which do not have the benefit of in-house specialised patent expertise (VPP, 2022).

42 Economic Analysis of the Grace Period, Europe Economics, 2014, p.40

43 Contributions of VNO-NCW, CNCPI, Union IP, CIPA, , 2022

44 Contribution of UNION-IP, 2022

2.4 Use of the grace period in other patent systems

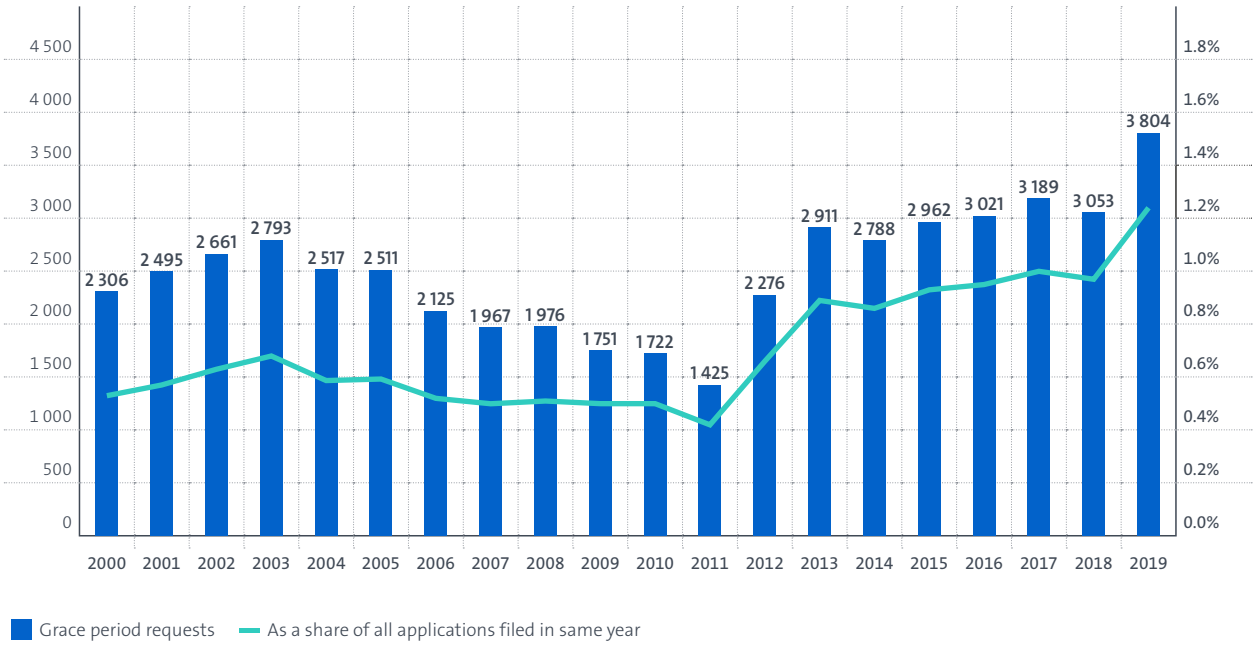
Statistical evidence on the use of the grace period is relatively scant, and not uniformly available across all jurisdictions that have a grace period. This section mainly focuses on Japan and R. Korea, both of which have a grace period with a declaration requirement. This allows them to keep a record of grace period requests, which enables statistical analysis and can provide useful insights into the use of grace periods by different categories of applicants in these jurisdictions. The JPO and KIPO have graciously shared national data with the EPO for the purpose of this study. The extensive US grace period is also discussed as an alternative benchmark. However, in the absence of any official data on the use of the grace period in the US, this latter discussion is necessarily based on more limited evidence.

2.4.1 Japan

Statistics produced by the Japan Patent Office (JPO) show that only a small fraction of JPO applicants make use of the grace period in Japan (Figure 2.4). The ratio of annual grace period requests to annual patent applications has remained close to 0.6% from 2000 to 2011, before increasing to 0.9% in just two years after the implementation, in 2012, of a reform broadening the scope of the grace period to cover essentially any form of disclosure (including e.g. sales) emanating from the applicant. From 2012 to 2018, the ratio of requests to applications has been slowly increasing to about 1%. It increased sharply in 2019 (to 1.2%) after the adoption in 2018 of a pro-patentee reform extending the grace period from 6 months to 12 months.

Figure 2.4

Use of the grace period in Japan



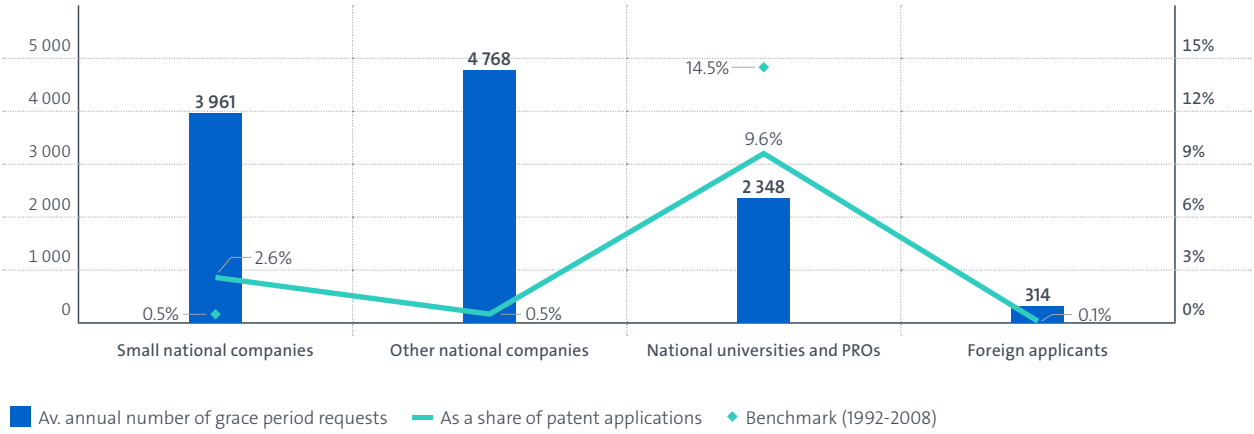
Source: JPO (2022), EPO

A closer analysis shows important differences between categories of users of the grace period in Japan (Figure 2.5). With 9.6 grace period requests per 100 patent applications, research institutions have been by far the most intensive users of the grace period between 2015 and 2018.[45] Small businesses follow with 2.6% of requests, while larger national companies and foreign applicants both show a ratio below 1%. However, this picture changes dramatically when considering the number of grace period requests originating within each category. Japanese companies accounted for more than 70% of all grace period requests during the 2015–2018 period, with a third of all requests coming from small businesses alone. In comparison, research institutions generated a modest 19.6% of all grace requests, and foreign applicants 2.6%.[46]

The study carried out by Nagaoka and Nishimura (2015) provides an interesting benchmark for this data. Focusing on the 1992–2008 period, it shows that Japanese universities and PROs used the grace period for up to 15% and 10% of their patent applications respectively; even more intensively than in the more recent period.
By contrast, private companies used the grace period less frequently, with a ratio of only 0.5%. This suggests that the 2018 reform has mainly led to an increase in the use of the grace period by national companies. In contrast, Japanese research institutions seem to have become less reliant on the grace period over time.

Figure 2.5

Use of the grace period in Japan by applicant category (2015-2018)



Source: JPO (2022), Nagaoka and Nishimura (2015), EPO

45 As shown in Figure 2.4, 2019 was a transition year following the implementation of a new reform in 2018. For this reason, it has not been taken into account in the calculation of the statistics presented in Figure 2.5.

46 Note that proportions are calculated with respect to the annual numbers of grace period requests reported in Figure 2.4, The total by category does not add up to 100% because the category of applicants could not be identified for about 5% of all grace requests. It is difficult in particular to identify small companies with certainty, and the corresponding data should therefore not be assumed to be accurately classified data.

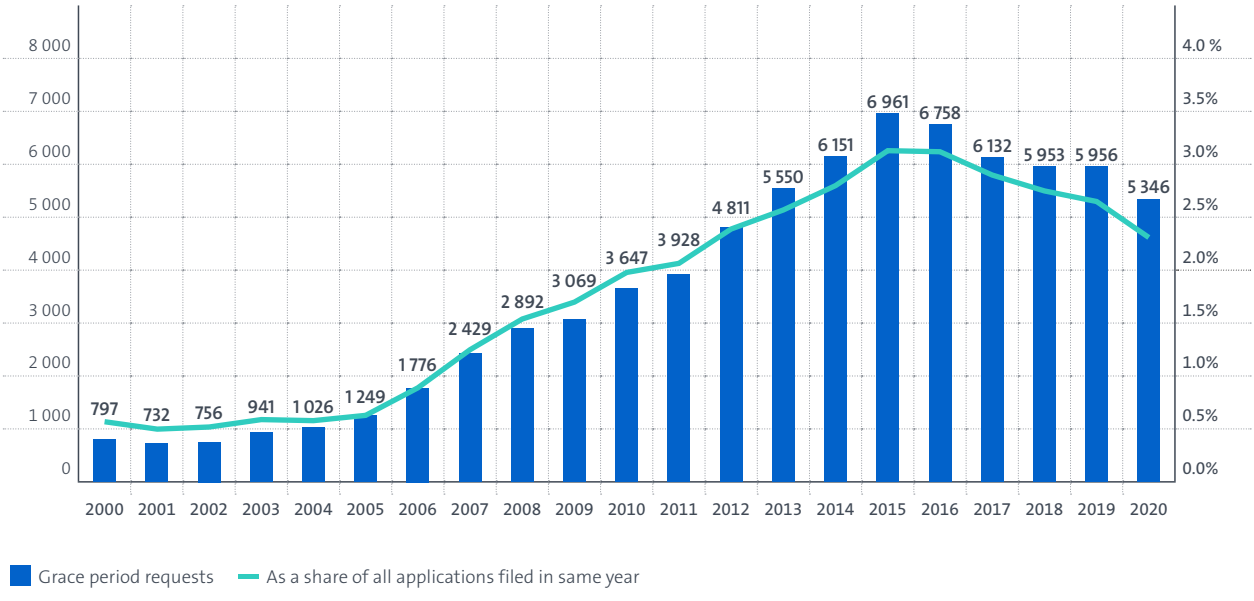
2.4.2 R. Korea

Statistics produced by the KIPO show that the use of the grace period has been two to three times more frequent in R. Korea than in Japan in recent years. The use of the grace period in R. Korea developed as the result of several reforms which successively broadened the scope of the grace period. Initially limited to disclosures without the consent of the person entitled to file a patent, experimental use, written publications and exhibitions authorised by the government, that scope was extended to include online disclosures and all exhibitions in 2001, before becoming applicable to all publications in any form in 2006. Finally, its duration was extended from six to twelve months in 2012. KIPO statistics show that the reforms of 2006 and 2014 fuelled a significant increase in the use of the grace period (Figure 2.6). It reached a peak in 2015, with nearly 7 000 requests representing slightly more than 3% of all patent applications at the KIPO during that year. By 2020, that rate had decreased to 2.3%, with a total of nearly 5 346 grace period requests.

Universities are by far the main users of the grace period in R. Korea, accounting for about 60% of all grace period requests with the KIPO in the 2015–2020 period (Figure 2.7). Public organisations (including mainly PROs) are the second largest user group, with 15% of all grace period requests. Together with non-profit organisations, universities and public research organisations are also the categories of applicants that are by far the most frequent users of the grace period. Korean universities in particular invoke the grace period for up to 20% of their patent applications at the KIPO, which by far exceeds the already high frequency of use observed for Japanese universities in Japan.

Figure 2.6

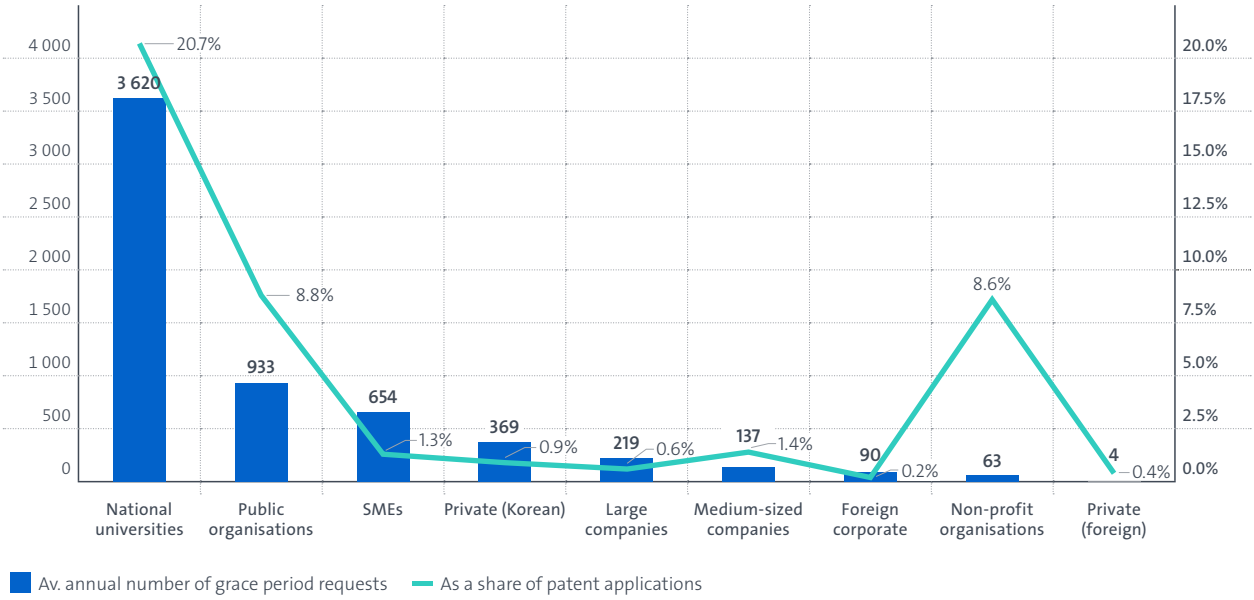
Use of the grace period in R. Korea



Source: KIPO (2022), EPO

Figure 2.7

Use of the grace period in R. Korea by applicant category (2015-2020)



Source: KIPO (2022), EPO

A closer analysis of the frequency of use of the grace period by Korean companies shows strong similarities with Japan, with comparable request to patent application ratios for large companies (0.6%) and medium-sized companies (1.4%). Therefore, the relatively modest share (6%) of all grace period requests originating from those companies in R. Korea is primarily due to their lower weight among patent applicants at the KIPO. As in Japan, small Korean companies use the grace period more frequently (1.3%) than larger ones, but still less frequently than their Japanese counterparts (2.6%, see Figure 2.5). These small companies alone account for 11% of all grace period requests. As in Japan, foreign applicants make minimal use of the national grace period in R. Korea.

2.4.3 United States

The US patent system is another important benchmark, with an extensive grace period[47] that does not comprise a declaration requirement. Thus, apparently there is no systematic record of grace period requests in the US[48], which makes it impossible to report statistics on the use of the grace period that are directly comparable to those of Japan and R. Korea.

In this context, past surveys are the main source of information, allowing for some comparisons with Japan (Table 2.3). They suggest that the share of national applicants who have been using grace periods in the US is at least equivalent to the figure in Japan. Moreover, applicants who use the grace period seem to do so more frequently in the US than in Japan. Overall, available survey results indicate a more intensive use of the grace period in the US than in Japan, which is consistent with the additional flexibility provided by the US grace period and the absence of any national mechanisms having a dissuasive effect on its use.

Evidence on the use of the US grace period broken down by user category is equally scant. The survey carried out for the present study provides some results on the share of US respondents who have used the grace period for US patent applications that have a corresponding application filed with the EPO. That share appears to be highest among US research institutions (67%), followed by large US companies (51%) and small US companies (41%). Consistent with this finding, an academic study[49] (see Box 2) estimates that up to 27.4% of US academic patents used the grace period.

Table 2.3

Evidence on the use of the grace period in the US

Source	Method	Results
Tegernsee User Consultation (2014)	Survey of companies and universities managing international patent portfolios	— 67% of US respondents have used the grace period, compared to 68% of respondents in Japan and 63% in Europe. — The share of respondents who used the grace period for 1 or more out of 100 applications reaches 49% in the US (the highest), compared with 40% in Japan and 29% in Europe (the lowest). — The share of respondents who used the grace period for 1 or more out of 10 applications reaches 33% in the US (the highest), compared with 15% in Japan and 5% in Europe (the lowest).
Europe Economics (2016)	Survey of EPO applicants	— 59% of US respondents have used the US grace period, compared to 48% of Japanese respondents who have used the grace period in Japan. — Further calculations show that a pool of applicants from the US and Japan have used a grace period for an estimated 2% of their applications, and that US and Japanese universities contributed two thirds of these grace requests (which corresponds to 11.5% of all their patent applications).
EPO survey (2022)	Survey of EPO applicants	— 51% of the large US companies that filed corresponding patent applications with both the USPTO and EPO have used grace periods for some of the US applications. — 41% of the small US companies (with fewer than 250 employees) that filed corresponding patent applications with both the USPTO and EPO have used grace periods for some of the US applications. — 67% of the US research institutions that filed corresponding patent applications with both the USPTO and EPO have used grace periods for some of the US applications.
Franzoni and Scellato (2010)	Study of USPTO patents with an academic origin	— 27.4% of US academic patents used the grace period. — The stricter novelty requirement in Europe creates an incentive for US universities to delay scientific publications.

47 See section 2.3 supra.

48 In the US, applicants may file affidavits under 37 CFR Rule 1.130 (a) and (b), i.e. declarations by the applicant of: (a) attribution (showing that the potential prior art subject matter originated with one or more members of the inventive entity) or (b) prior public disclosure (showing that the potential prior art subject matter was preceded by an inventor-originated disclosure of the same subject matter). These declarations are usually made as a response to a rejection, but can also be filed pre-emptively. They apparently cannot be conveniently tracked. Further, applicants may make statements upon filing regarding their prior disclosures under 37 CFR 1.77(b)(6), but these are part of the specification, and apparently cannot be conveniently tracked either. Finally, since the grace period in the US operates as a matter of law, USPTO personnel are not required to apply a disclosure as prior art under 35 U.S.C. 102(a)(1) if it is apparent from the disclosure itself that it was made by the inventor or a joint inventor, provided all other conditions for the grace period are fulfilled. Since this occurrence would appear to leave no trace in the file, there would be no data on its frequency.

49 Franzoni, C., Scellato, G. (2010) The grace period in international patent law and its effect on the timing of disclosure, Research Policy 39

3. Impact assessment of the strict novelty requirement in Europe

This section presents the survey data regarding the manner in which EPO applicants deal with the strict novelty requirement under the EPC. By documenting the policies that applicants have put in place to prevent the disclosure of novelty-destroying information, and the effect of those policies on the actual disclosure of inventions and patent application practices, this section aims to provide a first assessment of the impact of the lack of a grace period in Europe. We pay specific attention to identifying cases in which the strict novelty requirement under the EPC may impact consumers and the public by preventing the development and commercialisation of inventions.

The analysis is based on a survey of more than a thousand EPO applicants[50] conducted for the purpose of the study. We present the results by main applicant category (i.e. European companies, European research institutions and non-European companies), reflecting the different ways in which these categories of users may adapt to the strict novelty requirement in Europe.

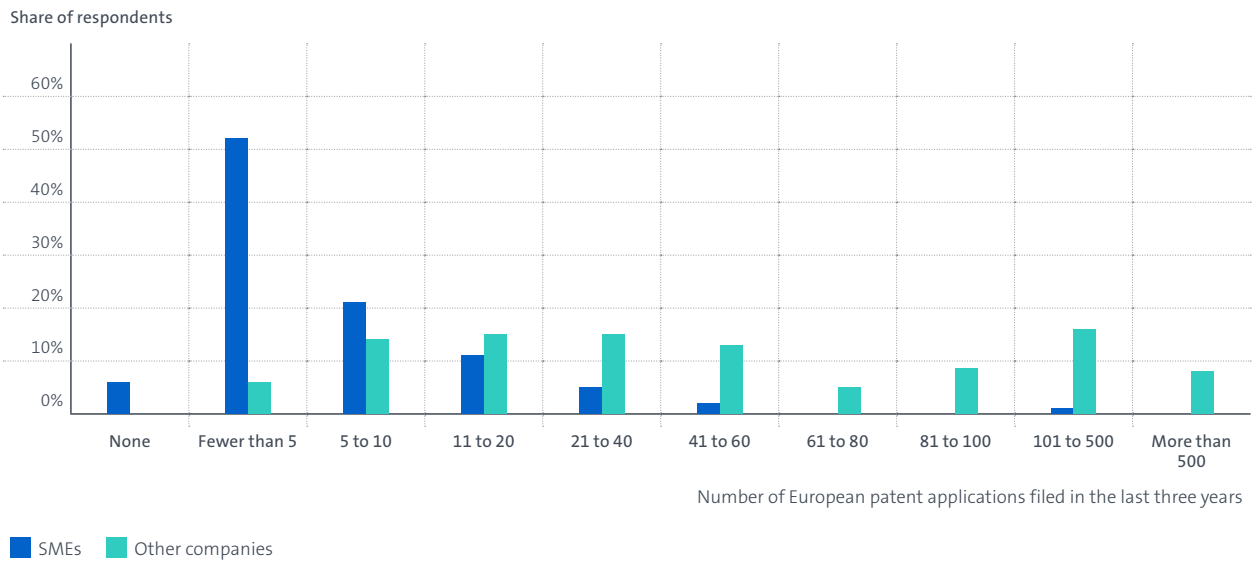
3.1 European applicants: companies

3.1.1 Patenting and disclosure by European companies

A total of 564 European companies, including 252 SMEs with fewer than 250 employees, responded to the survey. Their patenting activities in the last three years (Figure 3.1) reflect the diversity of European corporate applicants at the EPO. A large majority of the SMEs filed fewer than five European patent applications during that period, but a few report significantly higher numbers of filings. The numbers of European patent applications filed by other companies range from fewer than five to more than several hundred – with a quarter of respondents reporting more than a hundred filings over three years.

Figure 3.1

Patenting activities of European companies



Base: European SMEs (N=246) and other European companies (N=307) (excluding Other/No statement responses).
Note: Respondents were asked to reply to the question "How many filings of European patent applications have you and your team supervised on behalf of your current company in the past three years?" by selecting either one of the intervals reported in the figure.

Source: EPO survey on the grace period

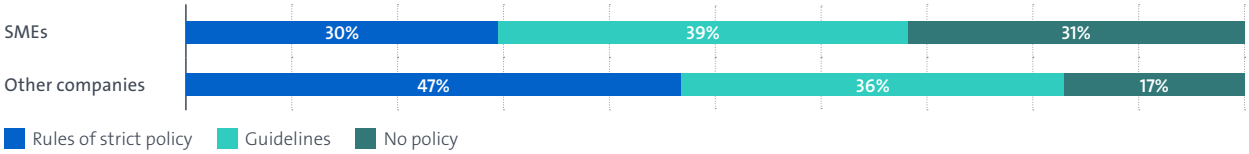
50 Including 282 research institutions and 823 companies in Europe, the US, Japan and R. Korea (see Annex 1)

A large majority of these European companies have established a disclosure policy to ensure compliance with the strict novelty requirement under the EPC. Specifically, more than two thirds of the SMEs and 83% of the larger companies have such a policy in place (Figure 3.2). The degree of stringency of these policies varies. A majority of large companies have adopted strict rule-based policies, whereas SMEs tend to favour more flexible indicative guidelines. While such policies do not eliminate potential conflicts between pre-filing disclosures and the patenting of inventions, the survey results show that they can mitigate the impact of these conflicts.

Complying with a strict novelty requirement implies that applicants must postpone or cancel disclosures of their inventions which would have predated the filing of a patent application. As illustrated in Figure 3.3, the postponement or cancellation of disclosures is strongly correlated with the existence of disclosure policies within companies. SMEs and larger companies are about twice as likely to report such actions when they have such a policy in place.

Figure 3.2

Disclosure policies of European companies

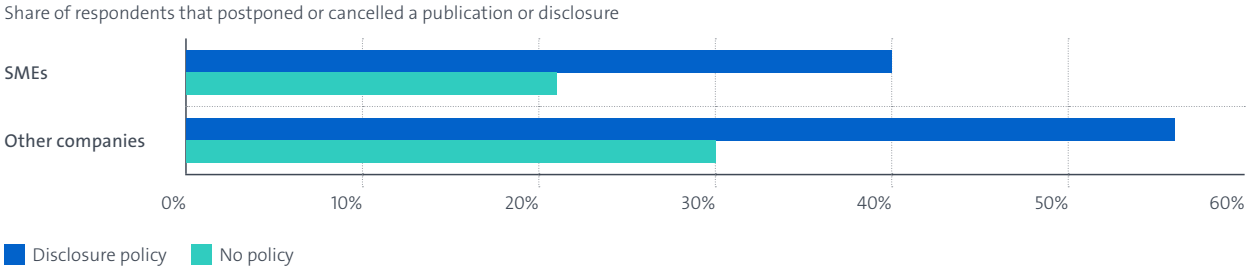


Base: European SMEs (N=233) and other European companies (N=279) (excluding Don't know responses).
Note: Respondents were asked to reply to the question "How would you qualify your company's policy to ensure compliance of the disclosure of scientific results with the novelty requirement in Europe?" by selecting one of the following answers: "No policy", "Guidelines"/"Rules or strict policy"/"Don't know"/"No statement".

Source: EPO survey on the grace period

Figure 3.3

Impact of disclosure policies



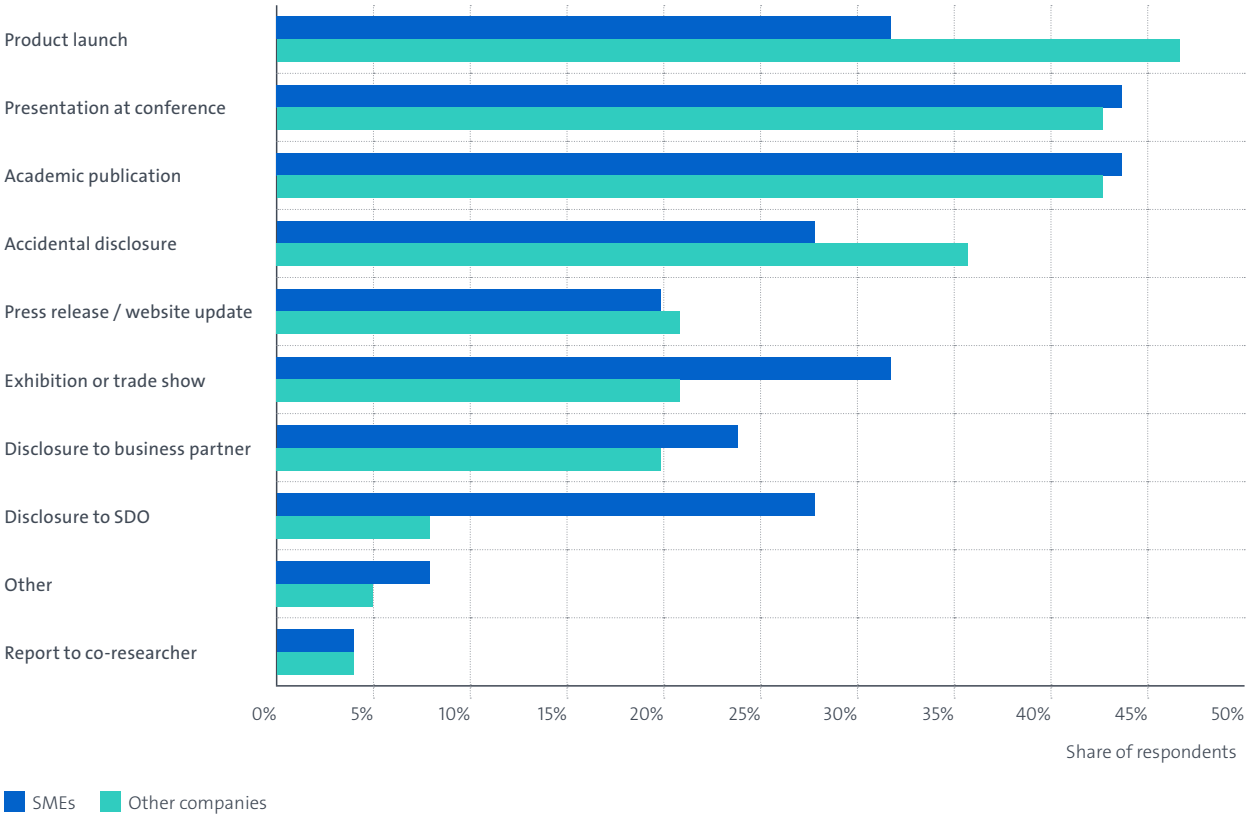
Base: European SMEs (N=209) and other European companies (N=275) (excluding Don't know responses).
Note: Respondents with and without disclosure policies were asked to reply to the questions "During the past three years, has this policy ever led you to have to refrain from, postpone or even cancel a publication or disclosure due to the absence of a grace period in Europe?" and "During the past three years, have you ever been in a position where you chose to refrain from, postpone or even cancel a publication or disclosure due to the absence of a grace period in Europe?" respectively.

Source: EPO survey on the grace period

SMEs and larger companies report that the types of disclosures that most frequently prevent patent applications are presentations at conferences and scientific publications (Figure 3.4) – although the results concerning SMEs in this regard should be interpreted with caution, due to the small number of observations. Product launches are also mentioned by a third of SMEs and nearly half of the larger companies. Moreover, the survey results suggest that SMEs are facing more difficulties than other companies with some categories of disclosures, possibly due to a lack of awareness of the patent system and, thus, of advisable good practices. Specifically, one third of SMEs report having made novelty-destroying disclosures at exhibitions or trade shows. More than a quarter of them also report issues with disclosures at standard development organisations, which is remarkable since only a subset of SMEs are likely to be involved in standard development activities.

Figure 3.4

Type of pre-filing disclosure



Base: European SMEs (N=23) and other European companies (N=74) that were prevented from filing a European patent application due to a prior disclosure (excluding Don't know responses).
Note: Respondents who had to refrain from, postpone or cancel a publication or disclosure by the absence of a grace period in Europe were asked to indicate the kinds of publications or disclosures which were affected.

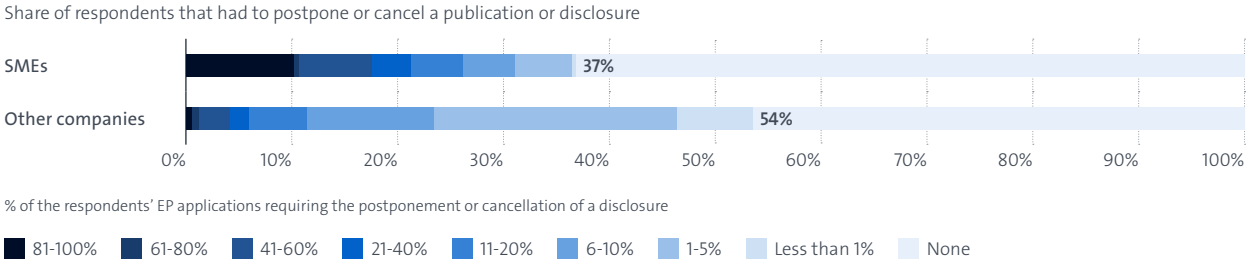
Source: EPO survey on the grace period

3.1.2 Impact of the strict novelty requirement on European companies

Overall, more than one third of SMEs (37%) and more than half of the other companies (54%) report that they had to cancel or postpone a disclosure prior to filing European patent applications in the past three years (Figure 3.5). The fact that a higher proportion of the larger companies experienced this constraint with at least one of their patent applications is not surprising, since these companies have been filing larger numbers of applications on average. For more than half of those companies, the share of their patent applications entailing the postponement or cancellation of prior disclosures did not exceed 5%.

Figure 3.5

Impact of the novelty requirement on knowledge disclosure

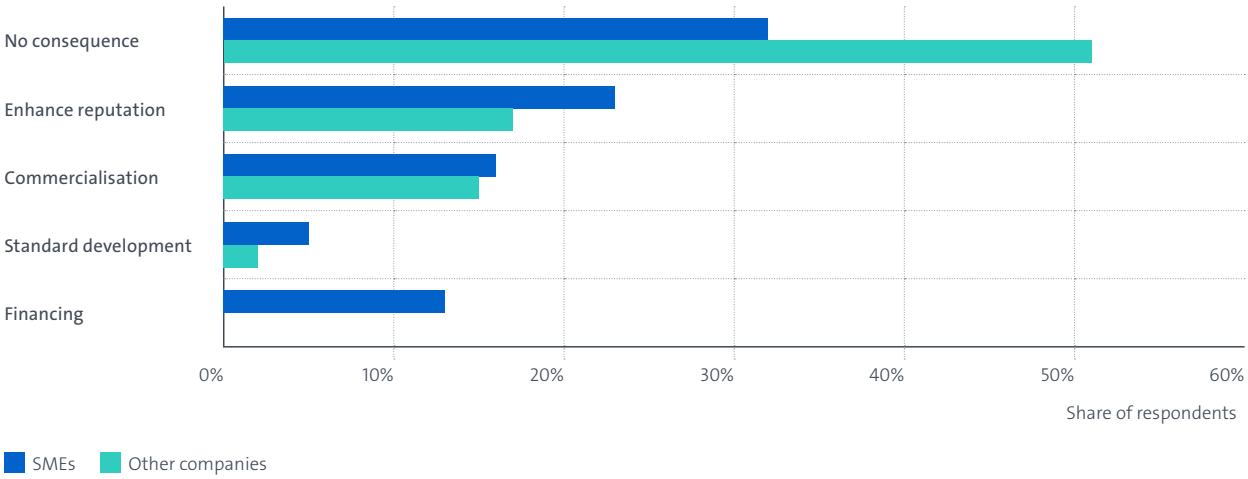


Base: European SMEs (N=209) and other European companies (N=275) (excluding Don't know responses).
Note: Respondents with and without disclosure policies were asked to reply to the questions "During the past three years, has this policy ever led you to have to refrain from, postpone or even cancel a publication or disclosure due to the absence of a grace period in Europe?" and "During the past three years, have you ever been in a position where you chose to refrain from, postpone or even cancel a publication or disclosure due to the absence of a grace period in Europe?" respectively. Respondents who answered in the affirmative were then asked to indicate "For what percentage of the European filings you've supervised over the past three years did this occur?" by selecting one of the ranges reported in the figure.

Source: EPO survey on the grace period

Figure 3.6

Main consequence of postponed or cancelled disclosures



Base: European SMEs (N=75) and other European companies (N=143) that had to postpone or cancel a disclosure or publication (excluding Don't know/Other/Engage in a joint-venture responses).
Note: Respondents who had to refrain from, postpone or cancel a publication or disclosure due to the absence of a grace period in Europe were asked "You said that due to the absence of a grace period in Europe you have had to refrain from, postpone or cancel a publication or disclosure. What was the consequence of this?".

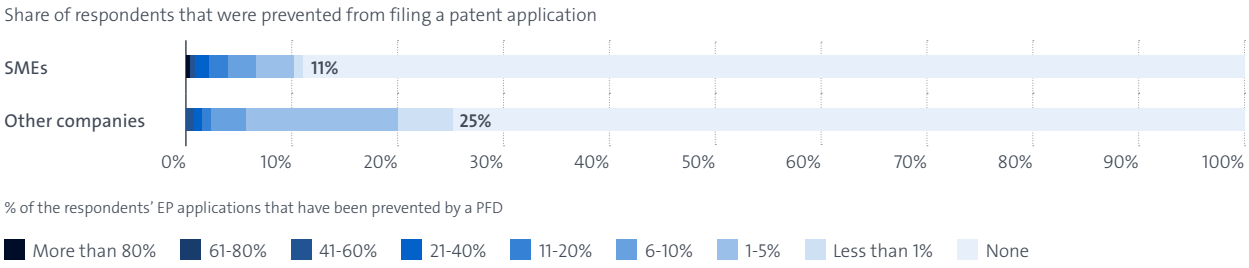
Source: EPO survey on the grace period

Figure 3.6 reports on European companies' assessment of the main consequences of having had to postpone or cancel disclosures in order to comply with the novelty requirement. Their most frequent response (32% of all SMEs and 51% of the other companies) is that they did not experience any serious consequences at all. However, some do report an actual impact. Besides mentioning opportunity costs in terms of reputation, 16% of SMEs and 15% of other European companies indicate that they lost opportunities to commercialise the invention. Some SMEs also cite lost opportunities to finance the development of the invention (13%) or to contribute to standard development (13%).

The direct consequence of a pre-filing disclosure of an invention under the EPC is that the invention will fail to comply with the strict novelty requirement, leading to the full or partial rejection of the corresponding patent application. As shown in Figure 3.7, 11% of SMEs and 25% of the other companies report that they have experienced one or more such rejections in the last three years. These proportions are two (for larger companies) to three times (for SMEs) lower than the proportions of respondents who postponed or cancelled disclosures (see Figure 3.5), which indicates that in most cases companies manage to comply with the strict novelty requirement. For most respondents, the failure to comply with the novelty requirement due to a prior disclosure concerns only a small share of their European patent applications.

Figure 3.7

Impact of pre-filing disclosures on patent applications



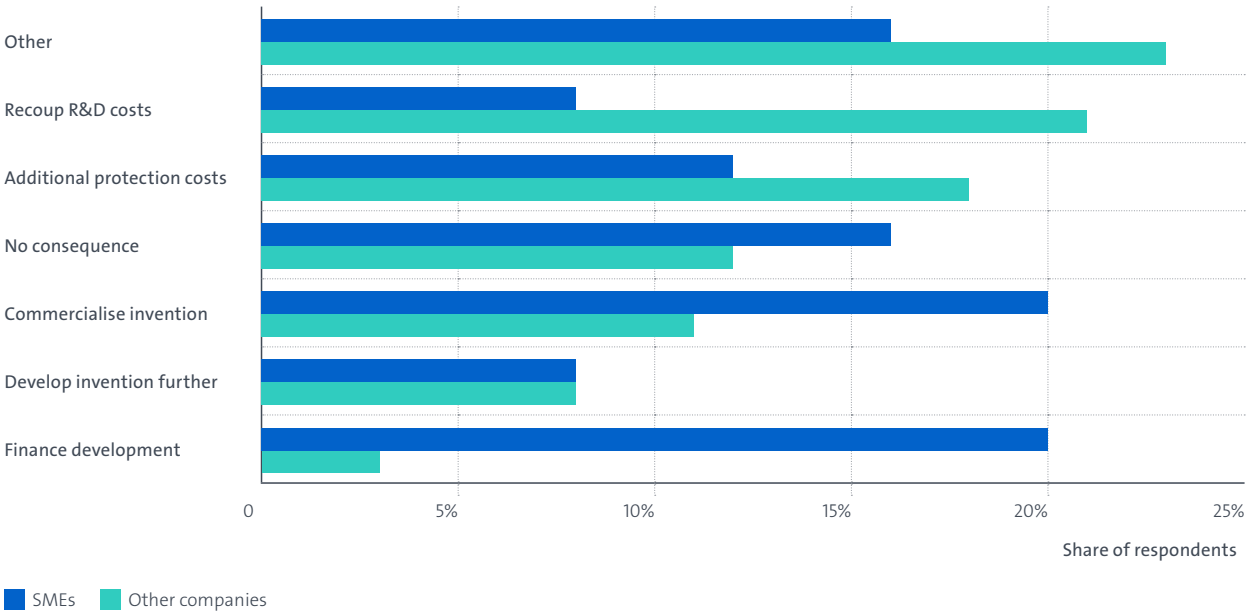
Base: European SMEs (N=227) and other European companies (N=294) (excluding Don't know responses).
Note: Respondents were asked "During the past three years, have you ever been prevented from filing an EP application by a pre-filing disclosure of the invention and the absence of a grace period in Europe?". Respondents who answered in the affirmative were then asked to reply to the question "What percentage of the EP filings you've supervised over the past three years did this apply to?" by selecting one of the ranges reported in the figure.

Source: EPO survey on the grace period

European companies consistently report that lost opportunities to file European patent applications due to pre-filing disclosures had direct economic consequences for the development and commercialisation of their inventions (Figure 3.8), in contrast with the milder consequences of postponing or cancelling such disclosures. However, there seem to be different consequences for SMEs and for larger companies, although the results should be interpreted with caution in the case of SMEs due to the limited size of the sample available. SME respondents most frequently report lost opportunities to commercialise or finance the invention, while other companies rather cite lost opportunities to recoup R&D costs, or the need to invest in alternative means to protect the inventions that they cannot patent. These differences probably reflect the fact that the inventions at stake are more likely to be of strategic importance for the core business of the SMEs, whereas other companies have a larger scope of activity that allows them to adjust their priorities or to more easily deploy alternative solutions to compensate for the lost opportunity to patent a given invention.

Figure 3.8

Main consequence of pre-filing disclosures



Base: European SMEs (N=25) and other European companies (N=70) that were prevented from filing a European patent application by a prior disclosure (excluding Don't know responses).
Note: Respondents who were prevented from filing a European patent application following a pre-filing disclosure due to the absence of a GP in Europe were asked "What was the main consequence of failing to obtain European patent protection?".

Source: EPO survey on the grace period

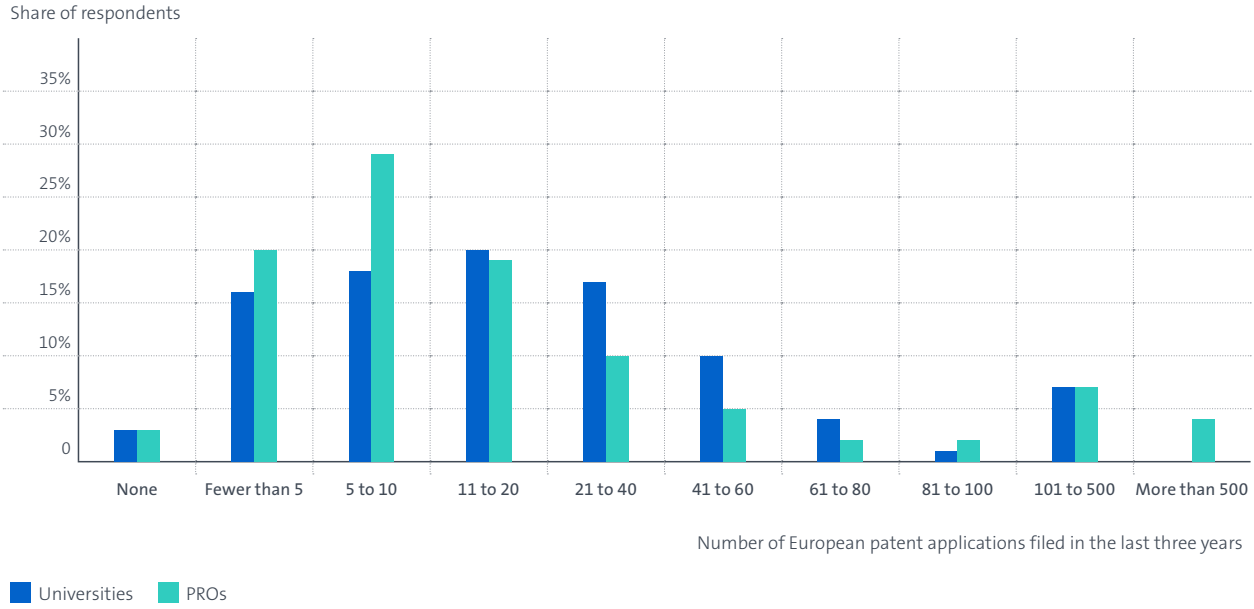
3.2 European applicants: research institutions

3.2.1 Patenting and disclosure by European research institutions

A total of 180 European research institutions responded to the survey. They include two main categories of institutions, namely universities (115 respondents) and PROs (59 respondents). A majority of the respondents filed between 1 and 20 European patent applications during the last three years (Figure 3.9). However, a small group of universities and PROs stand out with particularly high levels of patenting activity. Specifically, this group represents 7% of university respondents, each of which filed between 101 and 500 applications, and 11% of the largest PROs, reporting in some cases more than 500 applications in the last three years.

Figure 3.9

Patenting activities of European research institutions



Base: European universities (N=103) and PROs (N=53) (excluding Other/No statement responses).
Note: Respondents were asked to reply to the question "How many filings of European patent applications have you and your team supervised on behalf of your current company in the past three years?" by selecting either one of the intervals reported in the figure, or "More than 1 000" (merged with "More than 500" in the figure), "Other" or "No statement". Respondents who selected the range "More than 1 000" were additionally asked to provide an order of magnitude.

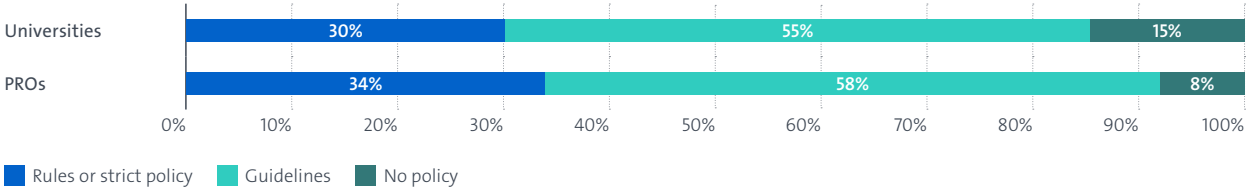
Source: EPO survey on the grace period

The proportion of respondents that have established a disclosure policy is very high among European research institutions and well above that observed among European companies. As reported in Figure 3.10, up to 85% of universities and 92% of PROs have such a policy in place. However, nearly two thirds of these policies are guidelines rather than strict rules. European research institutions therefore seem to favour a softer approach to compliance with the strict novelty requirement than European companies (see Figure 3.2), which may reflect the need for them to trade off the requirements of patent protection with other typical objectives of academic research, such as ensuring recognition for the institution and its researchers through scientific publications.

Again, there is a correlation between the existence of a disclosure policy and the proportion of universities and PROs reporting the postponement or cancellation of disclosures (Figure 3.11), as was also the case with European companies (see Figure 3.3). The impact of disclosure policies however appears to be smaller than among European companies, given the large share of respondents who report cancellations or postponements despite not having a disclosure policy in place. This suggests that even European research institutions which had not planned for it were able to develop ad hoc responses to the risk of prior disclosures.

Figure 3.10

Disclosure policies of European research institutions

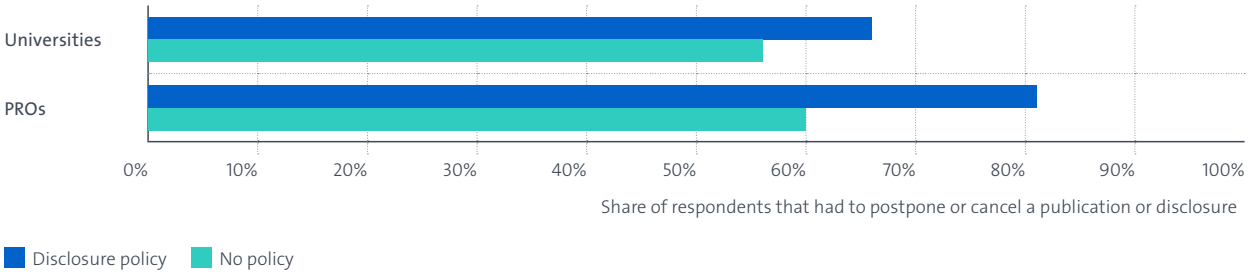


Base: European universities (N=110) and PROs (N=59) (excluding Don't know responses).
Note: Respondents were asked "How would you qualify your company's policy to ensure compliance of the disclosure of scientific results with the novelty requirement in Europe?" by selecting one of the following answers: "No policy", "Guidelines", "Rules or strict policy", "Don't know"/"No statement".

Source: EPO survey on the grace period

Figure 3.11

Impact of disclosure policies in European research institutions



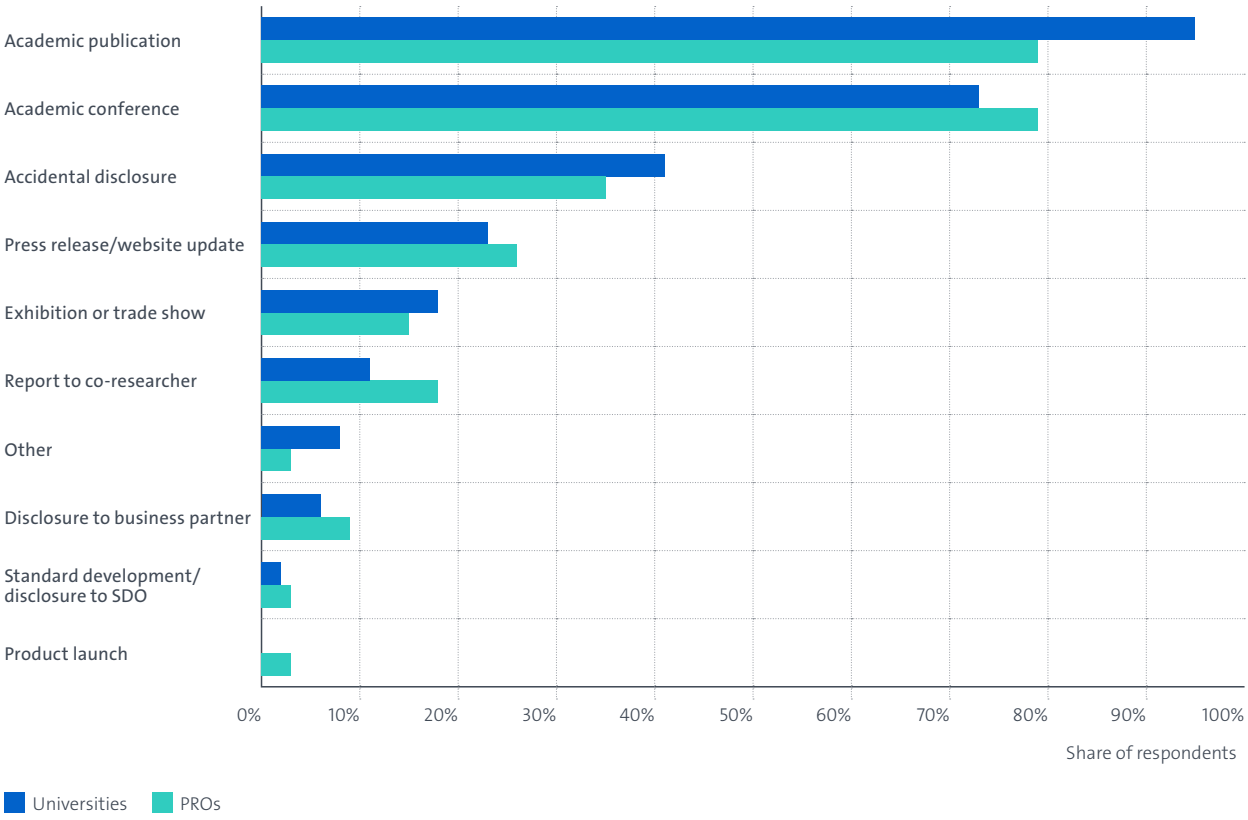
Base: European universities (N=102) and PROs (N=57) (excluding Don't know responses).
Note: Respondents with and without disclosure policies were asked to reply to the questions "During the past three years, has this policy ever led you to have to refrain from, postpone or even cancel a publication or disclosure due to the absence of a grace period in Europe?" and "During the past three years, have you ever been in a position where you chose to refrain from, postpone or even cancel a publication or disclosure due to the absence of a grace period in Europe?" respectively.

Source: EPO survey on the grace period

Unsurprisingly, most of the pre-filing disclosures have been academic publications and disclosures at academic conferences (Figure 3.12). Accidental disclosures and press releases or website updates are also mentioned, by about a third of the respondents. By contrast, disclosures related to business activities are hardly cited.

Figure 3.12

Type of pre-filing disclosure



Base: European universities (N=71) and PROs (N=46) which were prevented from filing a European patent application by a prior disclosure (excluding Don't know responses).
Note: Respondents who had to refrain from, postpone or cancel a publication or disclosure due to the absence of a grace period in Europe were asked to indicate what kinds of publications or disclosures were affected.

Source: EPO survey on the grace period

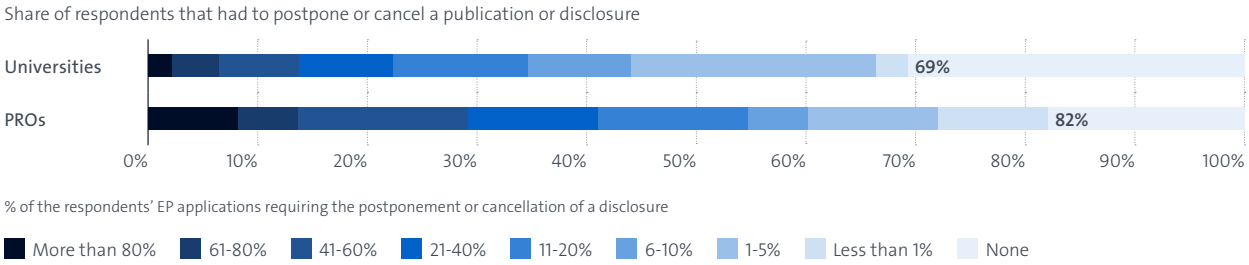
3.2.2 Impact of the strict novelty requirement on European research institutions

More than two thirds of universities and 80% of PROs report that they had to postpone or cancel publications in order to comply with the novelty requirement at the EPO (Figure 3.13). These proportions significantly exceed those reported by European companies (Figure 3.5), reflecting the higher frequency and importance of pre-filing disclosures for universities. The comparison with companies also shows that universities that postpone or cancel disclosures did so for a larger share of their patent applications. Indeed, half of those universities and 55% of those PROs postponed or cancelled 40% or more of their European patent applications.

Universities and PROs report that the costs of complying with the novelty requirement by delaying or cancelling disclosures are moderate (Figure 3.14). Half of universities and 30% of PROs mention the loss of opportunities to enhance their scientific reputation as the main consequence, and another 32% of universities and 17% of PROs do not identify any significant consequence at all. Only a relatively small proportion (20%) of

Figure 3.13

Impact of the novelty requirement on knowledge disclosure



Base: European universities (N=102) and PROs (N=57) (excluding Don't know responses).
Note: Respondents with and without disclosure policies were asked to reply to the questions "During the past three years, has this policy ever led you to have to refrain from, postpone or even cancel a publication or disclosure due to the absence of a grace period in Europe?" and "During the past three years, have you ever been in a position where you chose to refrain from, postpone or even cancel a publication or disclosure due to the absence of a grace period in Europe?" respectively. Respondents who answered in the affirmative were asked "For what percentage of the European filings you've supervised over the past three years did this occur?" by selecting one of the ranges reported in the figure.

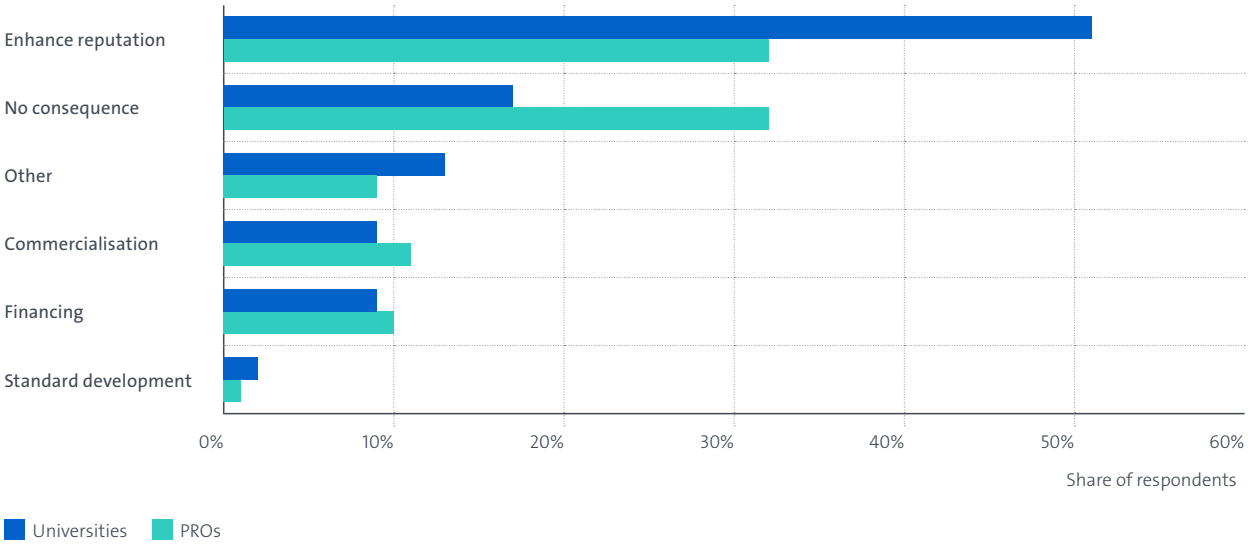
Source: EPO survey on the grace period

research institutions in the survey mention actual economic consequences, such as lost opportunities to commercialise the invention or to finance its development.

The fact that a very high proportion of European research institutions delayed or cancelled disclosures in the last three years did not prevent a similarly high share of these applicants from being exposed to novelty-destroying disclosures during the same period. Figure 3.15 shows that 65% of universities and 59% of PROs have experienced such issues, compared with only 11% of SMEs and 25% of other companies (Figure 3.7). Moreover, 16% of the universities and 21% of PROs report that pre-filing disclosures prevented them from filing patent applications for at least 40% of the inventions that they would have tried to patent otherwise.

Figure 3.14

Main consequence of postponed or cancelled disclosures

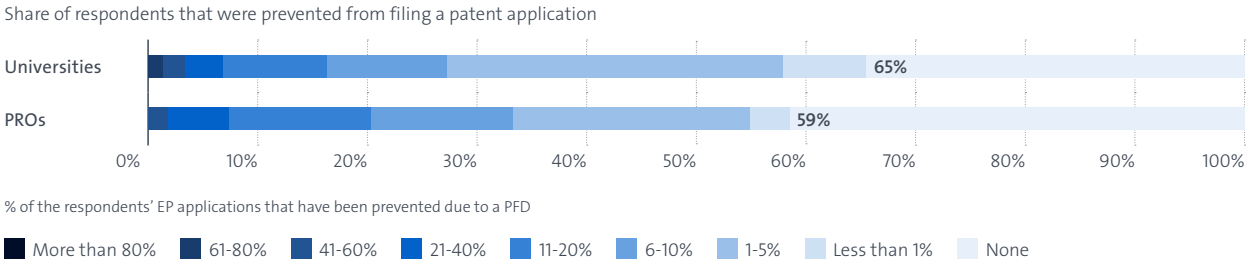


Base: European universities (N=68) and PROs (N=47) that had to postpone or cancel a disclosure or publication (excluding Don't know responses).
Note: Respondents who had to refrain from, postpone or cancel a publication or disclosure due to the absence of a grace period in Europe were asked "You said that due to the absence of a GP in Europe you have had to refrain from, postpone or cancel a publication or disclosure. What was the consequence of this?".

Source: EPO survey on the grace period

Figure 3.15

Impact of pre-filing disclosures on patent applications



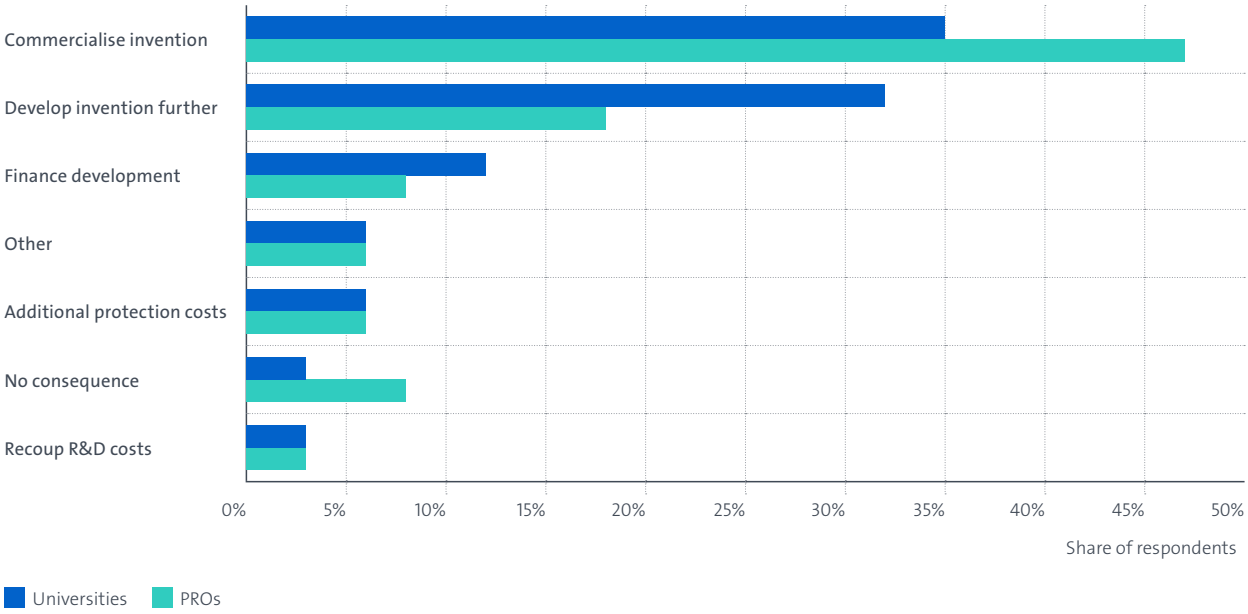
Base: European universities (N=97) and PROs (N=58) (excluding Don't know responses).
Note: Respondents were asked "During the past three years, have you ever been prevented from filing a European patent application by a pre-filing disclosure of the invention and the absence of a grace period in Europe?". Respondents who answered in the affirmative were then asked to reply to the question "What percentage of the EP filings you've supervised over the past three years did this apply to?" by selecting one of the ranges reported in the figure.

Source: EPO survey on the grace period

While the impact of postponed or cancelled disclosures by research institutions has been found to be limited (see Figure 3.14), the cancellation of patent applications due to pre-filing disclosures appears to have more serious economic consequences. This applies all the more as the inventions at stake are typically science-based, as indicated by the high frequency of scientific publications and communications among the pre-filing disclosures of research institutions (Figure 3.16). Both universities and PROs cite lost opportunities to commercialise or to further develop the invention as the main consequences by far. In contrast, only 8% of PROs and 3% of universities do not report any significant consequences from the inability to file for patent protection for their inventions.

Figure 3.16

Main consequence of pre-filing disclosures



Base: European universities (N=62) and PROs (N=33) that were prevented from filing a European patent application by a prior disclosure (excluding Don't know responses).
Note: Respondents who were prevented from filing an EP application following a pre-filing disclosure and due to the absence of a grace period in Europe were asked "What was the main consequence of failing to obtain European patent protection?".

Source: EPO survey on the grace period

3.3 US, Japanese and Korean companies

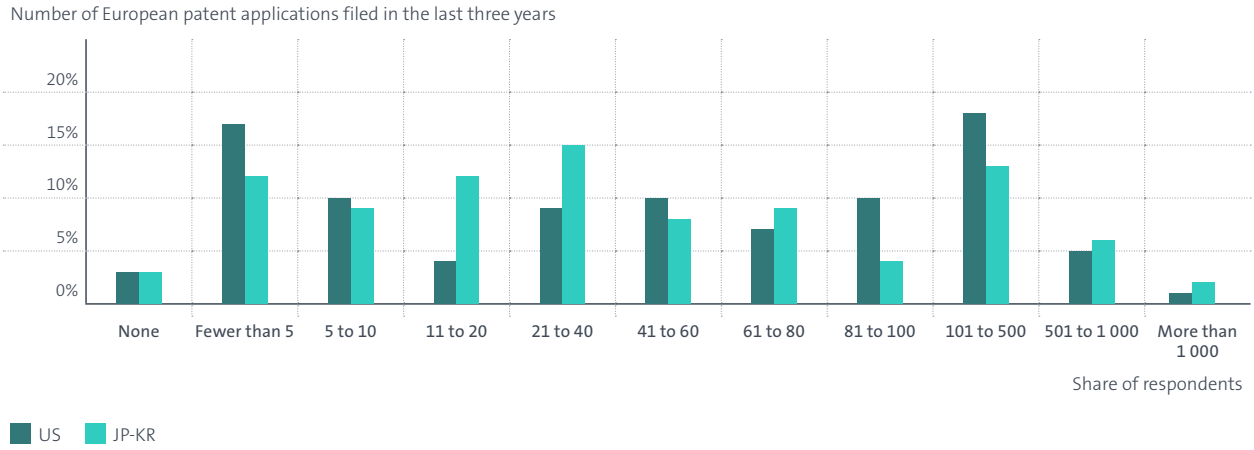
3.3.1 Patenting and disclosures by US, Japanese and Korean companies

A total of 564 non-European companies were surveyed, including 118 from the US and 140 from Japan or R. Korea.[51] Their applicant profiles at the EPO, as measured by the number of European patent applications filed in the last three years, are similar to those of European companies excluding SMEs (Figure 3.17). This is consistent with the fact that non-European corporate applicants at the EPO are typically large multinational corporations.

Despite those similarities, Figure 3.18 reveals important differences between US and Japanese or Korean companies with respect to their disclosure policies. A very large majority (82%) of US companies report that they have put such policies in place to comply with the strict novelty requirement at the EPO. By contrast, nearly half (46%) of the Japanese or Korean companies do not have any disclosure policy.

Figure 3.17

European patent filings by US, Japanese and Korean companies

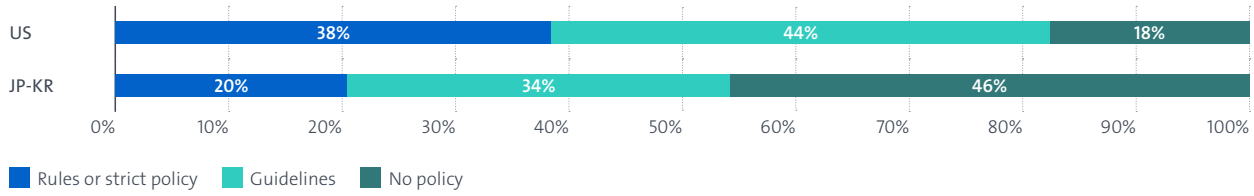


Base: US (N=111), Japanese and Korean (N=132) companies (excluding Other/No statement responses).
Note: Respondents were asked to reply to the question "How many filings of European patent applications have you and your team supervised on behalf of your current company in the past three years?" by selecting either one of the intervals reported in the chart, or "More than 1 000" (merged with "More than 500" in the figure), "Other" or "No statement". Respondents who selected the range "More than 1 000" were additionally asked to provide an order of magnitude.

Source: EPO survey on the grace period

Figure 3.18

Disclosure policies of US, Japanese and Korean companies



Base: US (N=107), Japanese and Korean (N=116) companies (excluding Don't know responses).
Note: Respondents were asked to reply to the question "How would you qualify your company's policy to ensure compliance of the disclosure of scientific results with the novelty requirement in Europe?" by selecting one of the following answers: "No policy", "Guidelines", "Rules or strict policy"/"Don't know"/"No statement".

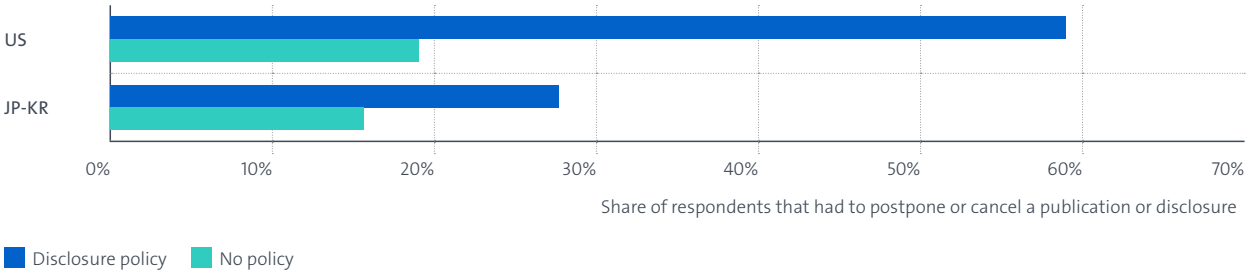
Source: EPO survey on the grace period

51 Note that in the initial stages of the survey, a number of US applicants refused to take part in the survey because the grace period was of no interest to them. This was surprising, as the considerable political pressure from the US on Europe to adopt a grace period would suggest that it is a pressing and pervasive problem affecting most if not all of US applicants.

A likely explanation is that US companies have to compensate for the lack of stringent processes to manage pre-filing disclosures when filing patent applications in their domestic market. Indeed, Figure 3.19 shows that nearly 60% of US companies that have disclosure policies had to postpone or cancel publications or disclosures to comply with the European strict novelty requirement. In comparison, only 16% to 19% of Japanese of Korean companies had to do so, whether or not they had a dedicated policy in place. This suggests that Japanese and Korean companies, having to comply with the respective national requirements to file a declaration listing their pre-filing disclosures, contrary to US companies in their domestic system, already have internal mechanisms tracking their pre-filing disclosures when filing applications with the JPO or the KIPO respectively.

Figure 3.19

Impact of disclosure policies on US, Japanese and Korean companies



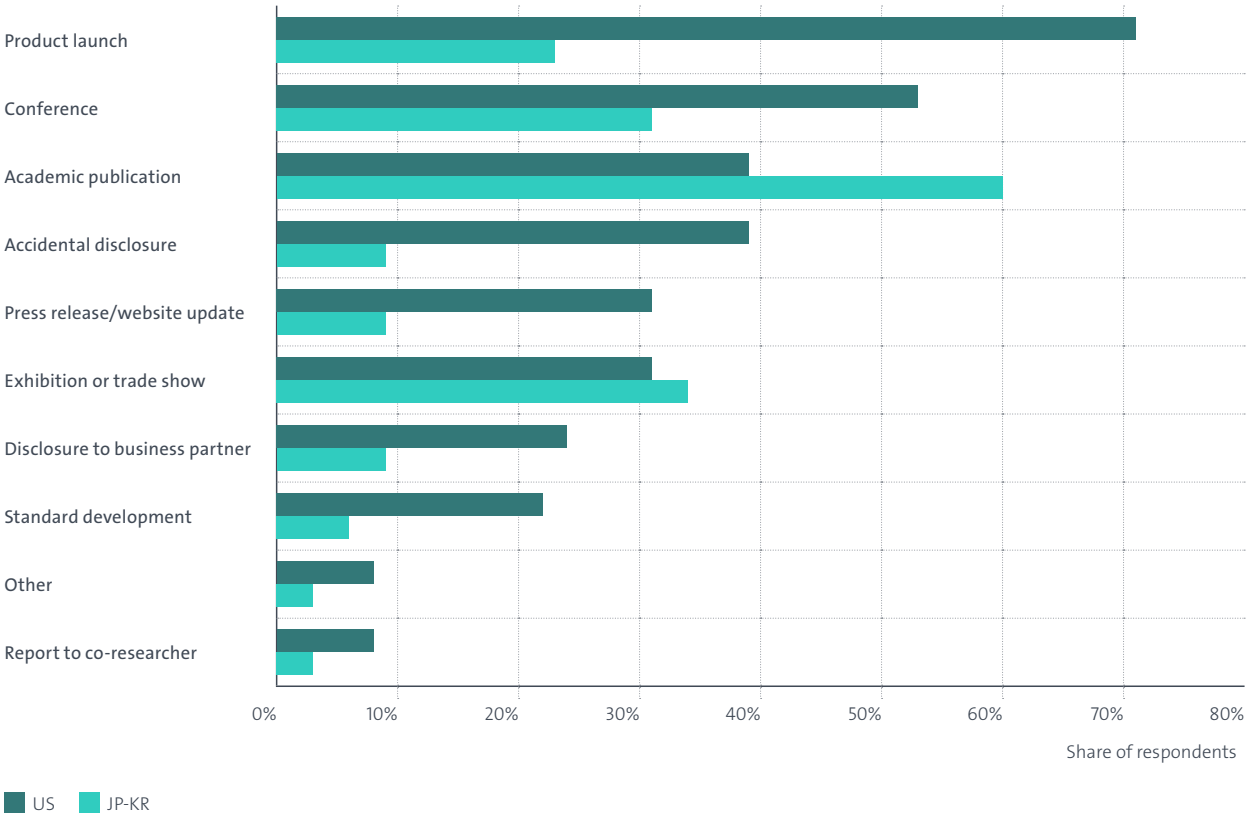
Base: US (N=101), Japanese and Korean (N=97) companies (excluding Don't know responses).
Note: Respondents with and without disclosure policies were asked to reply to the questions "During the past three years, has this policy ever led you to have to refrain from, postpone or even cancel a publication or disclosure due to the absence of a grace period in Europe?" and "During the past three years, have you ever been in a position where you chose to refrain from, postpone or even cancel a publication or disclosure due to the absence of a grace period in Europe?" respectively.

Source: EPO survey on the grace period

An analysis of the type of pre-filing disclosures that prevented US, Japanese or Korean companies from filing European patent applications tends to confirm this explanation (Figure 3.20), although the results should be interpreted with caution given the small number of observations. US respondents most frequently cite product launches as the main type of novelty-destroying disclosure, whereas Japanese and Korean respondents first mention academic publications, exhibitions and trade shows. Moreover, US companies more frequently report issues with accidental disclosures, disclosures to business partners or contributions to standard development processes than their Japanese and Korean counterparts, thus suggesting a lesser ability to control the disclosures induced by their business processes.

Figure 3.20

Type of pre-filing disclosure



Base: US (N=53), Japanese and Korean (N=17) companies that were prevented from filing a European patent application by a prior disclosure (excluding Don't know responses).
Note: Respondents who had to refrain from, postpone or cancel a publication or disclosure due to the absence of a grace period in Europe were asked to indicate what kinds of publications or disclosures were affected.

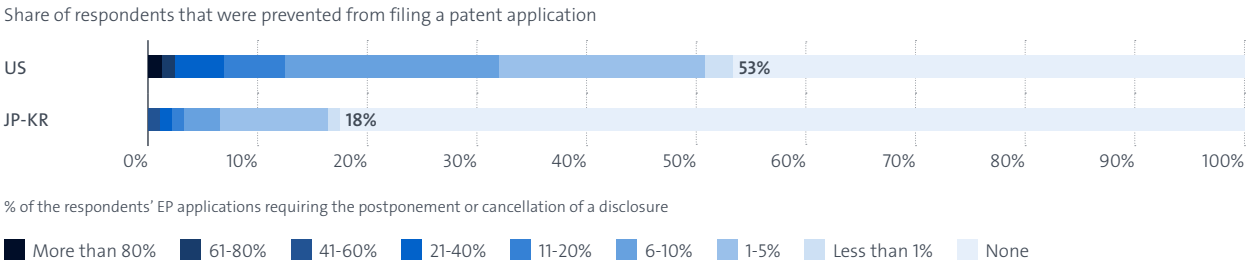
Source: EPO survey on the grace period

3.3.2 Impact of the strict novelty requirement on US, Japanese and Korean companies

Overall, more than half of US companies report that they had to postpone or cancel disclosures in the last three years in order to file patent applications with the EPO, whereas only 18% of Japanese or Korean companies had to do so (Figure 3.21). For most of these applicants (76% of US and 81% of Japanese or Korean companies), this concerned only a small share of 10% or less of their patent applications. This is consistent with the fact that these applicants typically filed relatively large numbers of European patent applications in the last three years.

Figure 3.21

Impact of the novelty requirement on knowledge disclosure



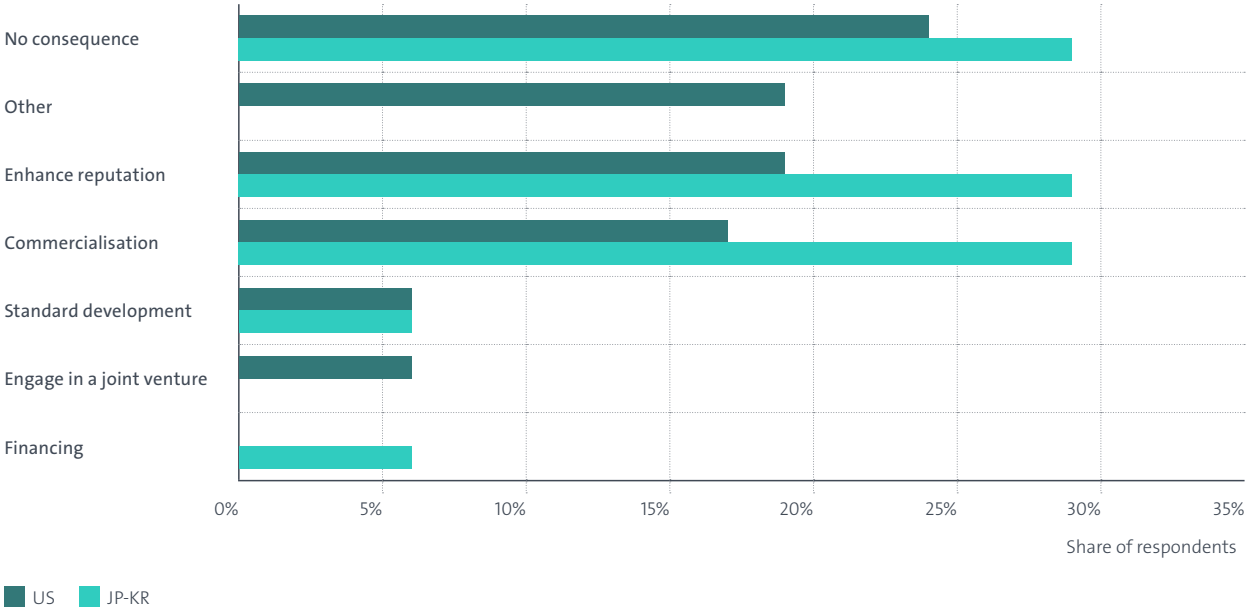
Base: US (N=101), Japanese and Korean (N=97) companies (excluding Don't know responses).
Note: Respondents with and without disclosure policies were asked to reply to the questions "During the past three years, has this policy ever led you to have to refrain from, postpone or even cancel a publication or disclosure due to the absence of a grace period in Europe?" and "During the past three years, have you ever been in a position where you chose to refrain from, postpone or even cancel a publication or disclosure due to the absence of a grace period in Europe?" respectively. Respondents who answered in the affirmative were then asked "For what percentage of the European filings you've supervised over the past three years did this occur?" by selecting one of the ranges reported in the figure.

Source: EPO survey on the grace period

The business impact of these disclosure postponements or cancellations has been mild according to most respondents. US, Japanese and Korean companies most frequently report that there were no significant consequences (Figure 3.22). However, a relatively high proportion of respondents, especially among Japanese and Korean companies, also report lost opportunities to enhance their scientific reputation or to commercialise new technology due to aborted disclosures, as well as delays in commercialising the invention.[52]

Figure 3.22

Main consequence of postponed or cancelled disclosures



Base: US (N=49), Japanese and Korean (N=17) companies that had to postpone or cancel a disclosure or publication (excluding Don't know responses).
Note: Respondents who had to refrain from, postpone or cancel a publication or disclosure due to the absence of a grace period in Europe were asked "You said that due to the absence of a grace period in Europe you have had to refrain from, postpone or cancel a publication or disclosure. What was the consequence of this?".

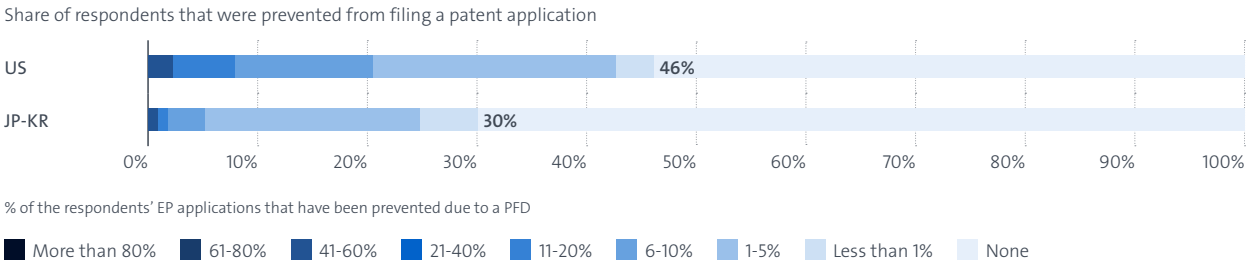
Source: EPO survey on the grace period

52 Most of the US respondents that responded "Other" to the survey further explained that they did not exactly experience a lost opportunity, but rather a frustrating delay in their commercialisation process.

Although a larger share of US companies have disclosure policies in place, the share of respondents that have been prevented from filing a European patent application by a pre-filing disclosure is 50% higher among US companies (46%) than among Japanese or Korean companies (30%). Figure 3.23 also shows that the US respondents who report issues with pre-filing disclosures experienced such issues more frequently than their Japanese or Korean counterparts. Specifically, 17% of US companies report pre-filing disclosures for 10% or more of their European patent applications, compared with 7% of Japanese or Korean companies.

Figure 3.23

Impact of pre-filing disclosures on patent applications



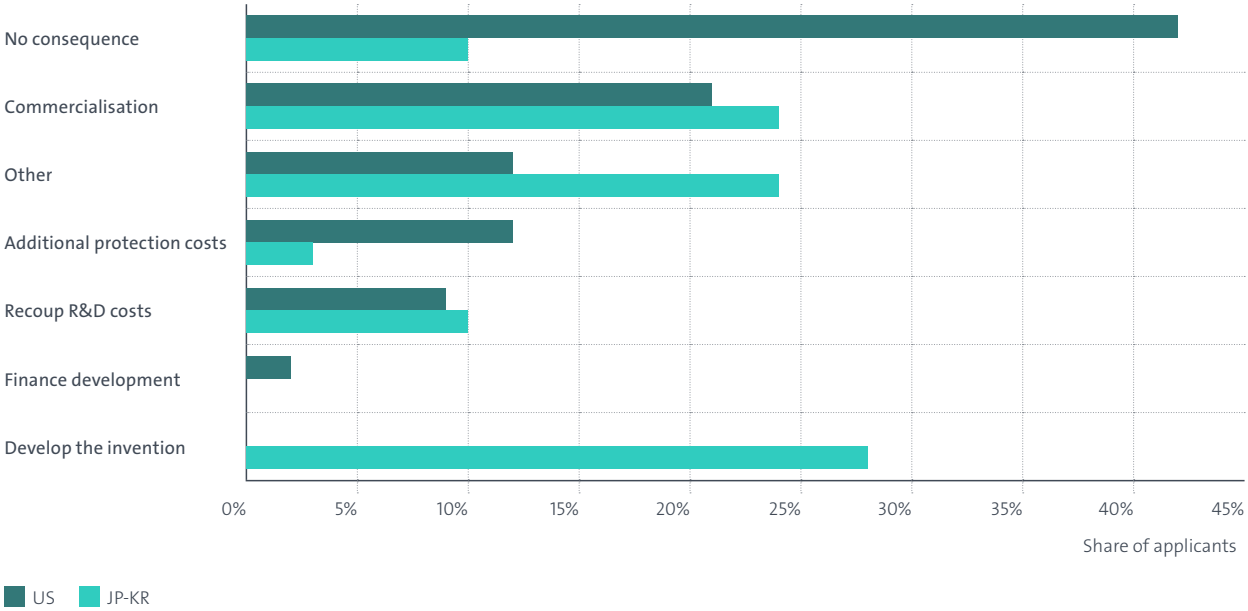
Base: US (N=107), Japanese and Korean (N=116) companies (excluding Don't know responses).
Note: Respondents were asked "During the past three years, have you ever been prevented from filing an EP application by a pre-filing disclosure of the invention and the absence of a grace period in Europe?". Respondents who answered in the affirmative were subsequently asked to reply to the question "What percentage of the EP filings you've supervised over the past three years did this apply to?" by selecting one of the ranges reported in the figure.

Source: EPO survey on the grace period

US and Japanese or Korean corporate applicants, finally, report different consequences of pre-filing disclosures on their respective businesses. More than 40% of US respondents indicate that such disclosures had no significant impact[53], and only 21% mention lost opportunities to commercialise the invention as the main consequence – which, in contrast, is the most frequent response of Japanese and Korean companies. This suggests that securing patent protection in European markets may be of greater economic importance for Japanese and Korean companies than for US companies.

Figure 3.24

Main consequence of pre-filing disclosures



Base: US (N=42), Japanese and Korean (N=29) companies that were prevented from filing a European patent application by a prior disclosure (excluding Don't know responses).
Note: Respondents who have been prevented from filing a European patent application by a pre-filing disclosure and the absence of a grace period in Europe were asked "What was the main consequence of failing to obtain European patent protection?".

Source: EPO survey on the grace period

3.4 Summary of the findings

The results of the survey show both similarities and important differences in how key categories of EPO applicants have been impacted by the strict novelty requirement under the EPC. Figure 3.25 a summarises the main consequences of postponed disclosures and prevented patent applications due to pre-filing disclosures (Figure 3.25 b) in terms of share of the respondents' total patent applications. It confirms that being prevented from filing a patent application by a pre-filing disclosure is more likely to have direct consequences for innovation – such as lost opportunities to develop or commercialise the invention – than the mere postponement of a disclosure until the filing of an application.

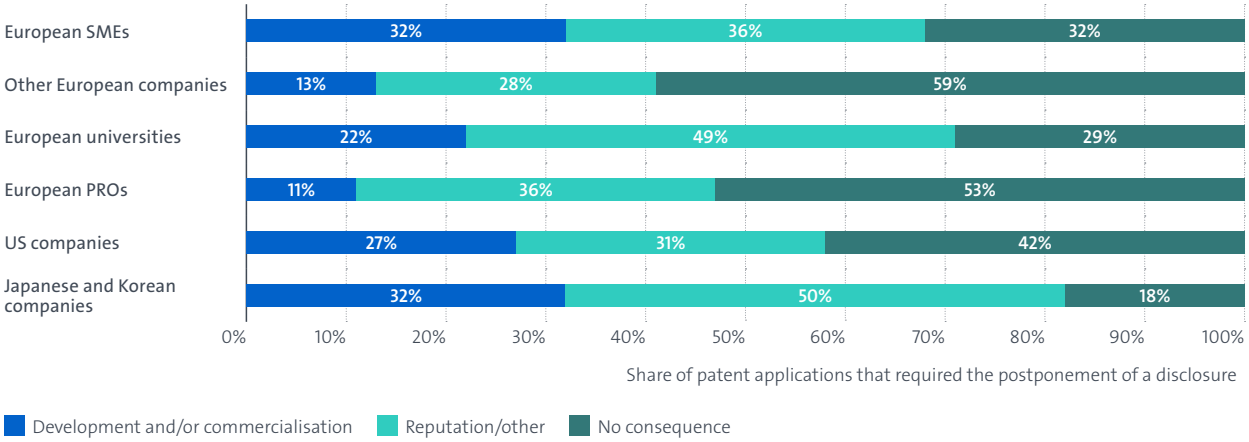
53 The proportion of US respondents that do not report any significant consequence is lower (32%) when weighting the respondents by their respective number of European patent applications, but it remains the most frequent response.

However, the impact of prevented patent applications is not equal across all categories of applicants. It is especially high among European universities, for which 71% of failed patent applications entail lost opportunities to develop or commercialise the invention. European SMEs and Japanese or Korean respondents are also likely to experience serious economic consequences (for 60% and 61% of the patent applications that they cannot file due to pre-filing disclosures respectively). In comparison, serious consequences are less frequent for larger European companies (30%) and for US companies (27%).

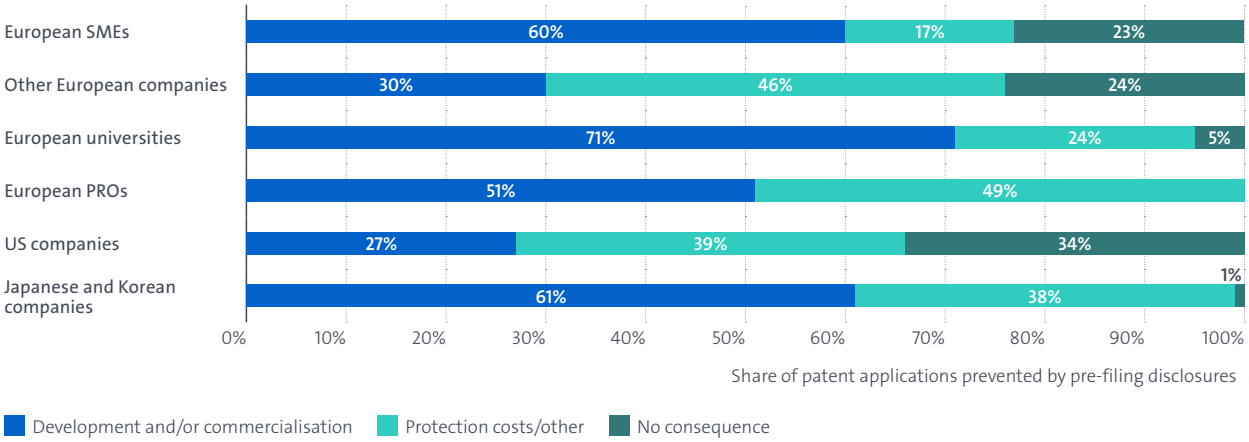
Figure 3.25

Main consequences of postponed and pre-filing disclosures under a strict novelty requirement

a. Main consequence of postponed disclosures



b. Main consequence of patent applications prevented by pre-filing disclosures



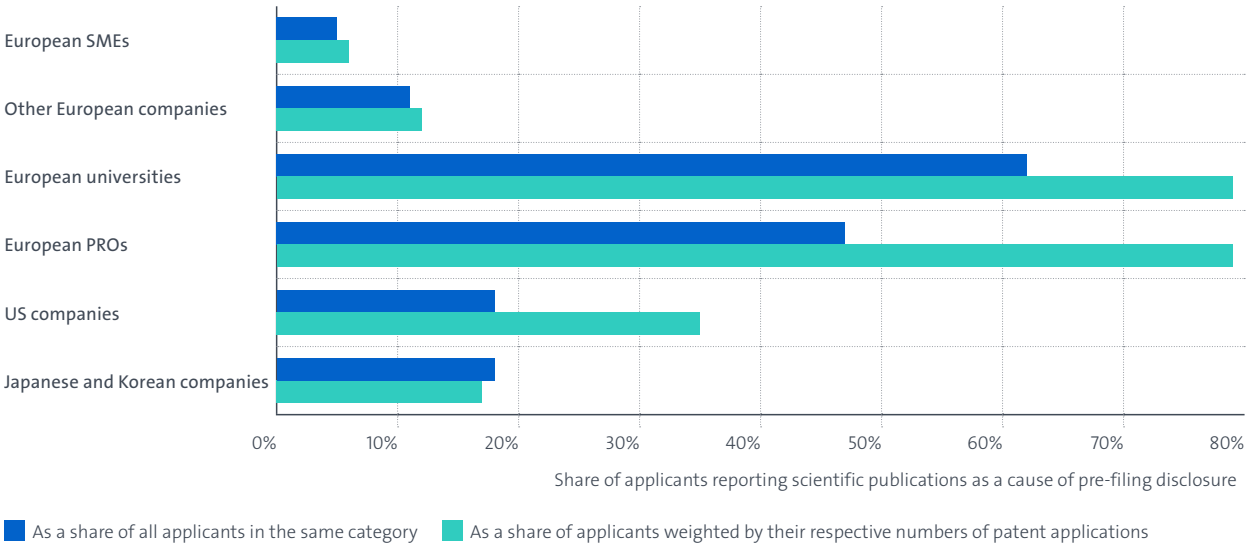
Note: The results reported are estimated shares of all the European patent applications filed by the respondents in the last three years. They were calculated in three steps using survey data. As a first step, the number of European patent applications filed by each respondent in the last three years was estimated using the median value of the interval they had selected in response to the question "How many filings of European patent applications have you and your team supervised on behalf of your current company in the past three years?". For large applicants which had selected the largest interval, information on the number of European patent applications filed in the last three years by each respondent was cross-checked against the EPO's record of patent applications. As a second step, the estimated number of European patent applications filed by each respondent was used to weight, within each applicant category, the respondents' responses to the questions "You said that due to the absence of a GP in Europe you have had to refrain from, postpone or cancel a publication or disclosure. What was the consequence of this?" (Figure 3.25 a) and "What was the main consequence of failing to obtain European patent protection?" (Figure 3.25 b). As a third step, the responses to these two questions were aggregated into three broader categories, namely "Development/commercialisation" (grouping the responses "Finance development", "Commercialisation", "Joint venture", and "Lost opportunity to contribute to a standard development process"), "Additional protection costs/other" (grouping the responses "Reputation" and "Other") and "No significant consequence".

EPO survey on the grace period

The survey results show that pre-filing disclosures that prevent the filing of patent applications are often scientific publications, which means that the impacted inventions are more science-based and thus tend to be of higher potential economic value. As shown in Figure 3.25, this is especially true in the case of European research institutions: 62% of all European universities and 47% of all European PROs (representing nearly 80% of the European patent applications filed in their respective categories) report pre-filing disclosures due to scientific publications. The proportion of European companies reporting such pre-filing disclosures is much lower: about 5% for European SMEs and 11% for other European companies. However, it is higher among US companies and Japanese and Korean companies, in both cases around 18% of all respondents in the respective EPO applicant categories. Moreover, the 18% of US applicants reporting pre-filing disclosures due to academic publications account for up to a third of European patent applications in their category, thus indicating that they are typically large applicants.

Figure 3.26

Impact of scientific publications on pre-filing disclosures by applicant category



Note: The results reported are estimated shares of all the European patent applications filed by the respondents in the last three years. They were calculated in three steps using survey data. As a first step, the number of European patent applications filed by each respondent in the last three years was estimated using the median value of the interval they had selected in response to the question "How many filings of European patent applications have you and your team supervised on behalf of your current company in the past three years?". For large applicants which had selected the largest interval, information on the number of European patent applications filed in the last three years by each respondent was cross-checked against the EPO's record of patent applications. As a second step, the estimated number of European patent applications filed by each respondent was used to calculate, within each category of applicant, patent-weighted responses to the question "During the past three years, have you ever been prevented from filing an EP application by a pre-filing disclosure of the invention and the absence of a grace period in Europe?" in order to obtain an estimate of the share (A) of patent applications subject to a positive response to that question. A similar calculation was applied, within each applicant category, to the question "You said that you have been prevented from filing an EP application by a pre-filing disclosure and the absence of a grace period in Europe" in order to obtain an estimate (B) of the proportion of patent applications prevented by a scientific publication as a share of all patent applications that were prevented by pre-filing disclosures. As a third step, the proportion of patent applications prevented by a scientific publication was defined as a share of all patent applications within each category of applicant by calculating the product of A*B.

Source: EPO survey on the grace period

A majority of the respondents in each category have established disclosure policies to prevent the consequences of pre-filing disclosures. However, the effects of these policies are not homogeneous across categories. In particular, persistent differences can be observed in the frequency of postponed disclosures and pre-filing disclosures, as well as in the frequency of pre-filing disclosures caused by scientific publications.

In order to facilitate further comparisons, Table 3.1 provides a selection of key indicators derived from the survey for each EPO applicant category. The second column of the table indicates the share of respondents that have adopted a disclosure policy within each category. The third and fourth columns provide, for each category, estimates of the share of the respondents' European patent applications that i) required the postponement or cancellation of a disclosure or publication (column 3) or ii) have been prevented because of a pre-filing disclosure (column 4).[54] The figures reported in these last two columns are estimates derived from the survey results and enable direct comparisons with available statistics on the use of grace periods in Japan and R. Korea (see section 2.4).

Table 3.1

Estimated impact of the strict novelty requirement by EPO applicant category

Applicant category	% of respondents with a disclosure policy	% of EP applications that required the postponement of a disclosure	% of EP applications prevented by a pre-filing disclosure
European SMEs	69%	10.4%	1.0%
Other European companies	83%	2.3%	0.8%
European universities	85%	12.1%	7.8%
European PROs	92%	6.6%	3.7%
US companies	82%	4.1%	7.2%
Japanese and Korean companies	54%	0.4%	2.3%

Note: The results reported in the last two columns are estimated shares of all the European patent applications filed by the respondents in the last three years. They were calculated in three steps using survey data. As a first step, the number of European patent applications filed by each respondent in the last three years was estimated using the median value of the interval they had selected in response to the question "How many filings of European patent applications have you and your team supervised on behalf of your current company in the past three years?". For large applicants which had selected the largest interval, information on the number of European patent applications filed in the last three years by each respondent was cross-checked against EPO's record of patent applications. As a second step (explained here using the example of column 4), the estimated number of European patent applications filed by each respondent was used to weight, within each respondent category, the applicants' responses to the questions "During the past three years, have you ever been prevented from filing an EP application by a pre-filing disclosure of the invention and the absence of a grace period in Europe?" and (in case of a positive response) "What percentage of the EP filings you've supervised over the past three years did this apply to?". This made it possible to attribute a weight in terms of number of European patent applications, within each respondent category, to the following intervals identifying the share of the respondents' patent applications that were prevented by pre-filing disclosures (i.e., none, less than 1%, 1-5%, 6-10%, 11-20%, 21-40%, 41-60%, 61-80%, 81-100%). As a final step, the share of prevented applications within each category was calculated as the sum, over the different intervals, of the product of the patent-weight by the median value of each interval. The same procedure was used to calculate the results reported in the third column.

Source: EPO survey on the grace period

Table 3.1 highlights significant differences between European SMEs and other European companies. The latter very often have disclosure policies (83% of respondents), and show some of the lowest estimated shares of patent applications that required the postponement of disclosures (2.3%) or that were prevented by pre-filing disclosures (0.8%). In contrast, compliance with the strict novelty requirement seems to be more challenging for SMEs. The share of respondents that have a disclosure policy is lower (at 69%) for this category. The proportions of their patent applications that either required the postponement of disclosures (10.4%) or were prevented by pre-filing disclosures (1.0%) are significantly higher than those for other European companies – while remaining very small in absolute terms. Nevertheless, it appears that European SMEs, like larger European companies, mainly adapt to the EPC novelty requirement by postponing disclosures, thereby avoiding in most cases the more serious consequences of being prevented from filing a European patent application.

The very high proportions of European universities and PROs that have a disclosure policy (85% and 92% respectively) denote the major challenge of accommodating a strict novelty requirement for academic research results produced in an open-science

54 The figures reported in these last two columns are estimates derived from the results of the survey.

environment (see Box 4). Like European companies, European research institutions most often address this challenge by postponing scientific publications or communications, thereby mitigating the risk of failed patent applications. However, universities have much higher shares of patent applications with either delayed disclosures (12.1%) or pre-filing disclosures (7.8%)[55] than European companies. Although PROs perform approximately twice as well (6.6% and 3.7% respectively) as universities according to these indicators, they nevertheless report more frequent issues than most European companies. Like universities, PROs also more frequently mention that their failure to file European patent applications due to pre-filing disclosures mainly resulted in lost opportunities to develop and commercialise new science-based technology that typically presents significant economic potential.

Unlike European applicants, US, Japanese and Korean companies show a higher share of applications prevented by pre-filing disclosures than of applications that required the postponement of disclosures. This demonstrates a more frequent failure to comply with the strict novelty requirement under the EPC, possibly due to the use of grace periods in their national patent systems.

However, there are important differences between US versus Japanese and Korean applicants. The proportion of patent applications that were prevented or required the postponement of a disclosure is particularly high among US companies (7.2% and 4.1% respectively), despite the existence of disclosure policies in 82% of these companies. By contrast, Japanese and Korean companies show much lower volumes of failed applications (2.3%) and postponed disclosures (0.4%), as well as a less frequent use of disclosure policies to ensure compliance with the strict novelty requirement in Europe. This suggests that Japanese and Korean companies already have established processes to manage disclosures in their respective national patent systems, where the grace period is more restrictive than in the US, and where it is necessary to keep track of disclosures in order to fulfil the stringent requirement of listing pre-filing disclosures in a declaration in order to be able to invoke the grace period. US companies, on the other hand, have to address a wider gap between flexible disclosure practices in their domestic market and the need to comply with stricter EPC rules in Europe. It is also worth noting that US companies are the only category in which a large share of respondents (40%) do not perceive any significant consequence of failing to obtain a European patent because of pre-filing disclosures. Such perceptions may make it more difficult to ensure compliance with the disclosure policies that have been adopted within US companies to prevent the problem.

When combined with data on the number of European patent applications filed by the respective applicant categories[56], these results provide a means to assess the number of cases in which such problems occur annually. The outcome of these calculations suggests that the strict novelty requirement creates problems for applicants in just over 10 000 cases a year, which represent approximately 6% of all European patent applications in 2021. US applicants are involved in about half of these instances (with 5 260 cases), and European companies in another third of them (with 3 870 cases). With 840 cases, Japanese and Korean applicants account for less than 10% of problematic cases, and European research institutions for only 6%, with 620 cases. As discussed in section 4, these numbers can be used as a baseline estimate of the potential volume of EP-application-related requests invoking the grace period if the grace period were introduced in Europe.

55 In their contribution to the EPO consultation, the German Patentanwaltskammer (PAK, 2022) cites figures that are close to these results. PAK indeed mentions that approximately 7% of European and international patent applications from academic institutions are rejected or withdrawn due to prior publications by inventors that are detrimental to novelty – not counting inventions that were not filed because of this.

56 The EPO Patent Index 2021 is used as the source of this data. In total, the applicant categories that are considered in the study accounted for 85% of European patent applications in 2021, the other 15% emanating from geographic regions not covered by the survey (including 9% from P.R. China). The estimated number of problematic applications therefore ignores potential cases stemming from these regions.

Box 4: The case of European universities

The survey results indicate that, of all categories of EPO applicants, European universities are the most strongly impacted by the strict novelty requirement under the EPC. Universities report the highest share (7.8%) of patent applications prevented by pre-filing disclosures, despite also reporting the highest share (12.1%) of postponed or cancelled disclosures (see Table 3.1). They are also the category of EPO applicants that most frequently (in 71% of cases, see Figure 3.25) experience serious economic consequences of being prevented from filing a European patent application by pre-filing disclosures. Finally, their pre-filing disclosures are typically scientific publications or communications, which suggests that the related inventions are more science-based and may therefore present a higher economic potential.

These issues are likely to significantly hamper the ability of European universities to effectively protect their inventions and bring them to market through technology transfers with the industry. They denote a fundamental tension between the culture of university scientists – whose primary goal is to have their results published quickly in a competitive open-science environment – and the strict timing of disclosures demanded by technology transfer offices (TTOs) to secure patent protection for research results that present an economic potential. The following quotes from surveyed university respondents (most of whom represent their university's TTO) provide some concrete examples of this tension:

"How to combine novelty with the need from the researchers to publish as soon as possible is a constant worry. We often receive information about the invention when researchers are ready to publish or have an already fixed date to disclose the information. This not only creates situations where sometimes we have to ask them to postpone publications but also forces TTO to rush and operate without a sufficiently developed strategy"

"The scientific publications and communications in conferences are two indicators associated with the execution of R&D projects, and most of the time researchers want to start to disseminate the results at an early stage of the development. Often, the results are not yet sufficiently validated to proceed with a patent application"

"There is a tendency for academic researchers to publish in an open access repository such as biorix prior to peer review, and they were unaware that this represented a disclosure and as a consequence we lost the opportunity to file"

"The urgency of publication is generally dictated by competitive pressure between universities for discoveries and inventions. Some of these publications are put on hold when this urgency is compatible with the deadline for drafting and filing a patent application. Failing this, publication is preferred and the filing of a patent is waived"

"As an academic institution, our inventors must publish their research and present their theses. They often cannot afford the time for a patent application to be filed in advance of the publication or presentation. In some instances, we have been able to delay the publication or presentation to ensure we meet the novelty requirement in Europe. Often times, we must forgo the opportunity to file an application in Europe due to the novelty requirement, but we can file in the US"

"Many disclosures to the university technology transfer office come in as the researcher is writing something for publication or even about to submit for a review where they sometimes are asked if there are patents related to this work they need to disclose"

"Of course there are scientific regulations in Germany. However, if a professor wants to publish, one tries to do justice to them. But when it comes to considering the financial possibilities, it can be postponed, but the decision itself is not made by the chair. We can only advise"

"In an academic organisation like ours, the scientists are eager to publish, and/or discuss their findings. Sometimes, the research is part of a PhD thesis and the thesis is publicly defended. in such circumstances, we refrain from filing due to the novelty requirement".

"The researchers usually already have the publication ready and wish to publish as soon as possible. This is especially important for PhD students. We always try to file the patent application as soon as possible (within a few weeks), so that the publication is not delayed too much"

4. Assessment of grace period scenarios for Europe

This section presents an impact assessment of the introduction of a grace period in Europe. This analysis is carried out in two steps. The potential for using the grace period in Europe is first quantified based on available information on EPO applicants' experience of the strict novelty requirement under the EPC (section 4.1). Additional data are then used to compare different policy scenarios. Survey data (section 4.2) make it possible to assess the expected impact of balancing mechanisms (such as the declaration system and prior user right – see section 2.3) on the adoption of a grace period and the legal uncertainty that it may generate. The contributions of representative EPO user associations to the consultation initiated for the present study are used to provide further insights into systemic ramifications of the grace period in section 4.3.

4.1 Potential quantitative impact of the adoption of a grace period in Europe

This section provides a baseline quantitative assessment of the potential number of grace period requests by EPO applicants, should a grace period be introduced in Europe. The assessment is based on available survey evidence on difficulties experienced by EPO applicants because of the strict novelty requirement.

4.1.1 Identification of potential motives for using a grace period in Europe

The problems currently created by the strict novelty requirement under the EPC are typically instances in which a European grace period would be used, if adopted. Two motives for doing so can be inferred, depending on the type of problem experienced by the applicant:

— **Use of the grace period as a safety net:** In some cases, respondents have been prevented from filing patent applications with the EPO because of pre-filing disclosures. The grace period is primarily meant to prevent such situations by providing a safety net, whereby the actual pre-filing disclosure by the applicant would not be considered to be novelty-destroying. Accordingly, the patent applications that have so far been prevented from being filed by pre-filing disclosures can be taken as a reasonable estimate of the potential number of cases for which a grace period would be invoked as a safety net if a grace period were available in Europe. The survey results also suggest that these are generally cases in which the applicant would perceive a real economic benefit in using a grace period (see Figures 3.8, 3.16 and 3.24 and the discussion in section 3.4).

— **Proactive use of the grace period:** In other cases, respondents had to postpone or cancel disclosures or publications in order to comply with the strict novelty requirement under the EPC. The applicants were aware of the risk created by the novelty requirement and in a position to prevent that risk. For such applicants, the availability of a grace period could undermine incentives to comply with established disclosure policies.[57] The grace period would create an alternative option, allowing them to deliberately proceed with the pre-filing disclosure and subsequently invoke a grace period upon filing a patent application. Since applicants would be in a position to choose *ex ante* whether or not to opt for a grace period, they would not use the grace period as a safety net, but rather in a strategic manner. Accordingly, the patent applications for which disclosures have been postponed or cancelled can be considered to be indicative of the potential baseline number of cases for which the grace period would be deliberately and proactively used if it were available in Europe. The survey results suggest that these are generally cases in which the applicants may not perceive the important economic benefit to be derived from using a grace period, since the filing of a patent application is not put at risk (see Figures 3.6, 3.14 and 3.22 and the discussion in section 3.4).

On this basis, the survey responses make it possible to calculate, for each of the two motives, estimates of the baseline potential use of a grace period among different categories of EPO applicants. However, note that these estimates are primarily based on observations of EPO applicants' behaviour under the strict novelty requirement that is currently in place under the EPC. They do not account for any further changes in applicant behaviour which might take place following the introduction of a grace period. For instance, the

57 For instance, the US and UK Study on Grace Periods (2015) mentions the concern among UK businesses that the introduction of a grace period could increase disclosures as staff may disregard stringent policies, knowing that inventions can still be protected.

availability of a grace period might lead applicants to make pre-filing disclosures in cases in which such disclosures would not even be even considered under the present system.[58] Thus, while these figures provide a baseline for the potential use of a grace period in Europe should one be adopted, they should not necessarily be considered predictive of the level of use of such a grace period in Europe, particularly since that level would in any event also depend on the design of the grace period (see section 4.2).

The estimates are reported in Table 3.1 (third and fourth columns) in terms of the share of European patent applications that could be subject to a grace period request (as a safety net or in a proactive manner respectively). They show that US, Japanese and Korean companies would mainly use the grace period as a safety net (fourth column), whereas European applicants have stronger potential for proactively using the grace period instead of postponing disclosures (third column) if they were given this option.

Figures 4.1 and 4.2 in turn provide an assessment of the potential use of the grace period by EPO applicants in terms of potential numbers of annual requests. The figures reported in these charts have been obtained by applying the estimated share of patent applications that could be subject to grace period requests (according to Table 3.1) to the number of European patent applications filed by the respective categories of EPO applicants[59] [60] in 2021 (according to the EPO Patent Index 2021). It must be emphasised that these figures only reflect a potential and should not be interpreted as a direct forecast of the number of requests that would be filed with the EPO if a grace period were adopted in Europe. Some applicants may indeed prefer not to use the grace period even if they have the option. Moreover, the decision to use the grace period strongly depends on the rules governing such use, and in particular on the balancing mechanisms that may be established to mitigate legal uncertainty (see section 4.2).

58 In the US and UK Study on Grace Periods (2015), both UK and US multinational businesses reported that they operated so as to comply with "the requirements of the most stringent market they are targeting" [Europe] (p.16), but also stated that if there was an internationally harmonised grace period, they would use it more often. UK multinationals stated that harmonisation of the grace period would make it "more transparent and effectively more useable as businesses would be able to protect their inventions across all key markets" (p.29). As for US businesses, they were supportive of grace periods and also believed that "their implementation in other key markets like Europe will make them more usable" (p.1; p.4). "While multinational businesses in the US do not routinely use grace periods as it removes the ability to patent in other key markets [Europe], there is a view that with a harmonised system there would be greater scope to grace inventions as this would still be commercially viable" (p.30). Noting that grace periods are likely to be used as a "recovery tool" where inadvertent disclosures occur, the study concluded that "should harmonised grace periods be implemented and [...] appropriately defined, use may go beyond inadvertent disclosures", p.35.

59 As mentioned above, the applicant categories considered in the study accounted for 85% of European patent applications in 2021, the other 15% emanating from geographic regions not covered by the survey (including 9% from P.R. China). The assessment reported in Figure 4.1 therefore ignores potential grace period requests stemming from these regions.

60 European universities and European PROs have been aggregated into a single category, in alignment with the EPO applicant categories used in the Patent Index 2021.

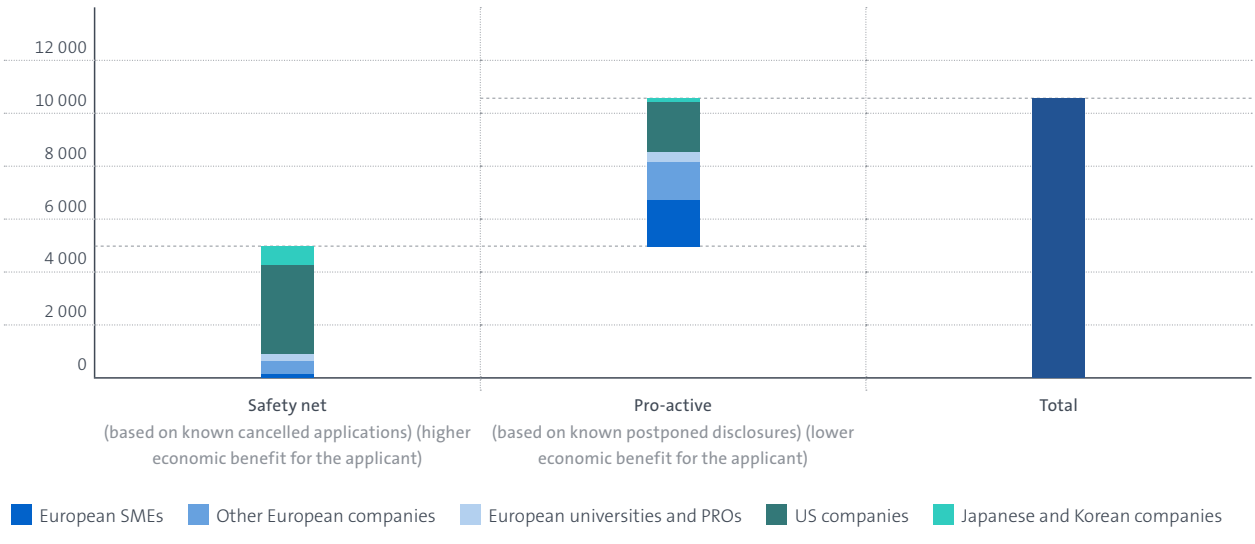
4.1.2 Potential number of grace period requests in Europe

Figure 4.1 provides important insights into the potential quantitative impact of a grace period on the European patent system. First, it shows (in the first column of the chart) that the direct use of a grace period in Europe as a safety net could involve up to 5 000 European patent applications, which corresponds to about 3% of all applications filed with the EPO in 2021. As indicated in Figure 4.1, US applicants alone account for about two thirds of these requests, which reflects both their high exposure to pre-filing disclosures and their large share (25%) of European patent applications overall.[61]
In comparison, Japanese and Korean applicants would use a European grace period as a safety net for only about 700 patent applications (14% of all requests), large European companies for 500 applications (10%), European research institutions for about 250 (5%) and European SMEs for about 170 (3%).

Second, the figure shows (in the second column) that the pro-active use of a grace period could generate another potential 5 000 requests (or 3% of all applications filed with the EPO in 2021), on a par with the potential use of the grace period as a safety net. The largest share of potential uses again lies with US companies (34%), but European SMEs account for a nearly equivalent share (31%) and larger European companies for another 26%. By contrast, the potential for European universities (7%) and Japanese or Korean companies (2%) to use the grace period proactively in Europe appears to be limited in volume compared to corporate applicants.

Figure 4.1

Potential impact of a grace period (in annual number of requests)

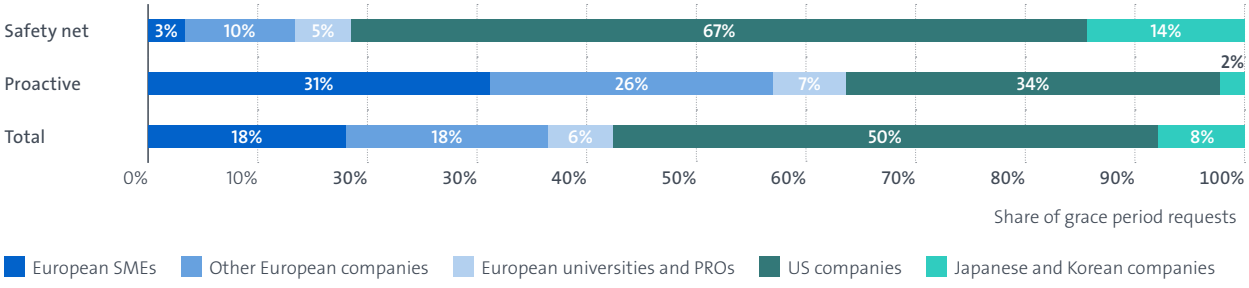


Source: EPO survey on the grace period and EPO Patent Index 2021

61 It is also pointed out that the figures projecting use of the grace period by Japanese, Korean and US applicants may consistently underestimate the potential use among these groups, since by definition, entities in these countries using the grace period may not be currently filing with the EPO, so that they may not be represented in the sample of EPO applicants.

Figure 4.2

Distribution of potential grace period requests by applicant category



Source: EPO survey on the grace period and EPO Patent Index 2021

4.1.3 Main factors driving potential grace period requests

Overall, our analysis shows a potential of about 10 000 annual grace requests at the EPO, corresponding to 6% of all European patent applications filed in 2021. This far exceeds the known use of the grace period in Japan (about 1%) and R. Korea (about 2.5%), which can be explained by the facts that i) some applicants may decide not to proactively use the grace period even though it is available in those countries, ii) in any event, the use of the grace period is probably restricted in these two countries by a declaration requirement (see section 4.2), and iii) the absence of a grace period in Europe and P.R. China may have a braking effect on its use in Japan and R. Korea. More specifically, two main factors are driving most of the potential grace period requests at the EPO:

— **A large potential number of grace period requests by US companies.** US companies account for two thirds of the potential use of a grace period as a safety net, and one third of its potential pro-active use. As a result, they represent 50% of the total potential for grace period requests at the EPO (Figure 4.2). This disproportionate impact (since US applicants account for only 25% of applications filed with the EPO) likely reflects the relatively frequent use of an extensive grace period system for first filings in their domestic market (see section 2.4.3), as well as a relative failure to comply with the strict novelty requirement under the EPC (see section 3.4). It is also noteworthy that, compared with other categories of respondents to the survey, US companies tend to report milder economic costs of being prevented from filing European patent applications, which implies that there might be lower economic benefits to be derived from using a grace period as a safety net in Europe.

— **A large potential number of pro-active grace period requests by European companies.** The survey results indicate that European companies generally manage to comply with the strict novelty requirement under the EPC, at the cost of relatively frequent postponement or cancellation of disclosures or publication (Table 3.1). While this explains their projected limited potential use of a grace period as a safety net, it also creates a strong potential for the pro-active use of a grace period as an alternative to the postponement or cancellation of pre-filing disclosures.[62] Indeed, European companies account for up to 57% of the potential for pro-active grace period requests, compared with only 13% of the potential for safety net requests (Figure 4.2). However, this full potential might not actually materialise should a grace period become available in Europe. The proactive use of a grace period depends on a trade-off between the cost and benefits of doing nothing versus obtaining a patent after simply postponing a disclosure (see Figures 3.6 and 3.8). The degree to which European companies would proactively exploit that opportunity likely depends on whether or not they would retain the discipline currently formalised in their disclosure policies.

Overall, these two factors account for no less than 80% of the estimated total potential use of a grace period at the EPO, and would concern about 2.4% of all European patent applications. However, they would probably

62 As a result of modifications to formerly stringent non-disclosure policies or, possibly, increased disregard by staff of such policies, as inventions can still be protected. See Patent Harmonisation: US and UK Study on Grace Periods, 2015. The Intellectual Property Office, p. 14.

generate limited individual benefits for their users in comparison with the economic benefits of using the grace period as a safety net for European research institutions and companies in particular (see Figure 3.25).

In light of their potential impact on the number of grace period requests, these two factors require particular attention in the assessment of the systemic impact of different policy scenarios for a European grace period. They are by far the most significant potential causes of legal uncertainty for third parties, and as such may undermine incentives to invest in innovation. In their contributions to the consultation, some user associations[63] warned that the adoption of a grace period would result in a de facto "first-to-publish" system. Some user associations also expressed concerns that the introduction of a grace period into the EPC could have an adverse economic impact on European entities as it would increase the number of European patents owned by foreign entities. This would increase the need for European companies to rely on freedom-to-operate analyses[64] which, in turn, are likely to be more costly and less reliable due to the grace period itself.

4.2 Impact of balancing mechanisms

The actual uptake of a grace period and its expected impact on legal uncertainty depend to a large extent on the manner in which a grace period would be implemented, and in particular on the balancing mechanisms that may be foreseen to mitigate legal uncertainty. One section of the survey was dedicated, therefore, to the impact of four different grace period scenarios, each of which involves specific balancing mechanisms or combinations thereof (see Box 5).

These policy scenarios include an extensive grace period without any balancing mechanism (similar to the current US model), a grace period with a declaration requirement (similar to the Japanese and Korean models), a grace period with a prior user right (similar to the Australian model) and a safety net model combining a declaration requirement and a prior user right. In the following sections, we have used the respondents' feedback on these four policy scenarios to compare their respective impacts in terms of the uptake of the grace period and its effect on legal uncertainty.[65]

Box 5: A typology of grace period systems

Four main grace period policy scenarios have been considered in the survey of EPO applicants:

- **A grace period without restriction.** This model closely resembles the grace period system in the US. It does not foresee any declaration requirement, entails no risk for the applicant using the grace period due to prior user rights accruing to third parties because of pre-filing disclosures, and ensures protection from some intervening third-party disclosures. This privileges the first person to disclose but provides no safeguards for third parties.
- **A grace period with a declaration system only.** In some of the countries that have a grace period (such as Japan and R. Korea), patent applicants must file a declaration stating when and how information about their invention was made available to the public by or on behalf of the applicant. By consulting the patent office file, any third party can then quickly check whether a pre-filing disclosure is graced, in which case it will not affect the validity of the patent. This information remains relevant after the patent has been granted.
- **A grace period with prior user rights only.** In some of the countries that have a grace period (such as Australia), third parties acting in good faith can obtain prior user rights based on knowledge of an invention gained as a result of that invention being made public prior to filing. These third parties can then continue to use the invention after the patent has been granted. As this creates a risk for applicants, they will use the grace period only when there is a compelling reason to do so, which in turn lessens the impact of the grace period on the system.
- **A grace period with both a declaration requirement and prior user rights.** This model combines both types of safeguards for third parties.

63 Contributions of CNCPI, CIPA, VNO-NCW (2022)

64 Contributions of EPI and CEOE (2022). VNO-NCW (2022) also indicate that they believe Article 55 EPC deters users of the global patent system from relying on the availability of a grace period in international filing strategies.

65 The results presented in this section are based on the answers provided by all respondents. In order to test their robustness to the degree of the respondents' knowledge of the grace period, the same questions were also submitted to a selection of respondents who indicated that they had a "good" or "excellent" knowledge of at least one grace period system among the US, Japanese, Korean and Australia systems. Those additional results (not shown in this report) are remarkably similar to the ones reported in this section.

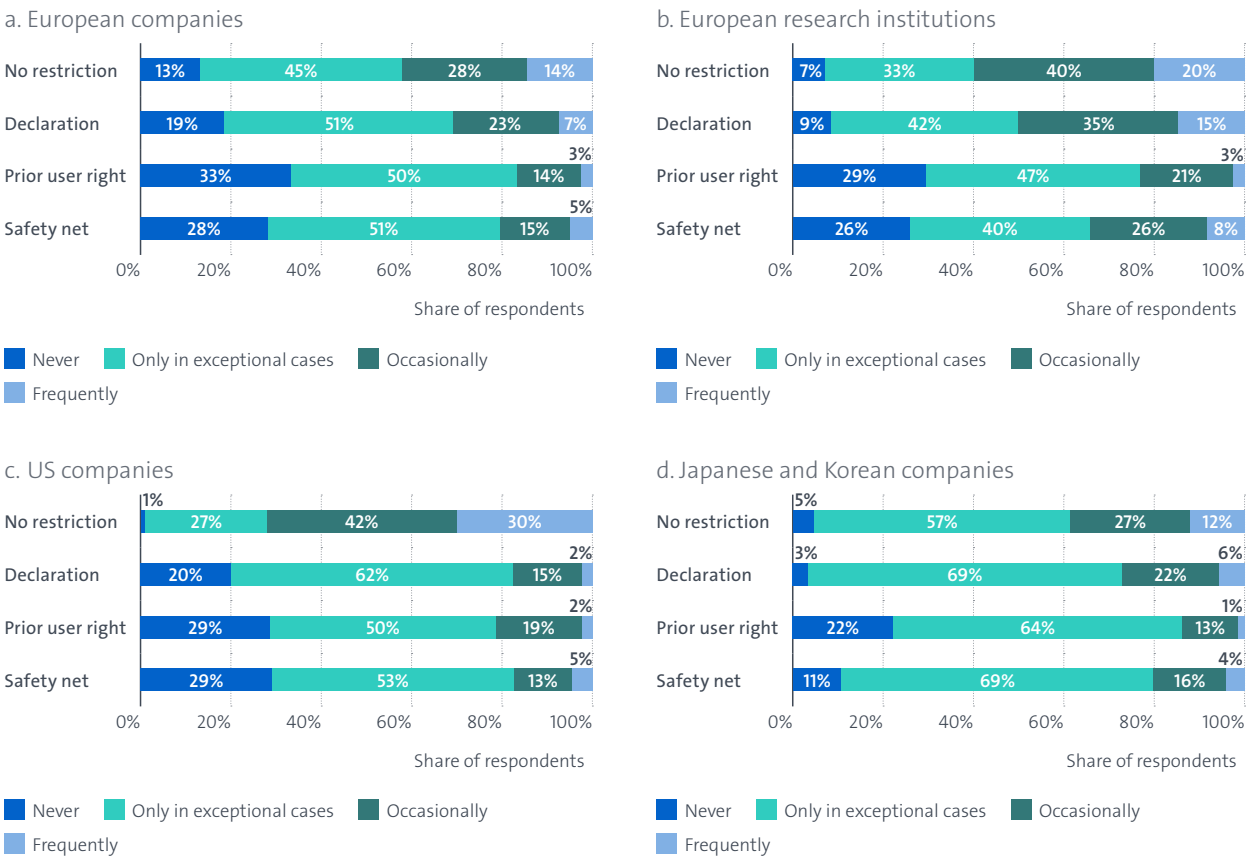
4.2.1 Potential use of a grace period

Because they place constraints on the use of the grace period, balancing mechanisms may firstly have an effect on the frequency with which a grace period is actually used. In other words, they determine the degree to which the potential uses of the grace period identified in section 4.1 may materialise. To assess this impact, respondents to the survey were asked how frequently they would use the grace period in each policy scenario. The results (reported in Figure 4.3) tend to confirm the regulating role of balancing mechanisms, albeit with important differences between applicant categories.

An unrestricted grace period aligned to the US model would clearly yield the highest frequency of use among all categories of EPO applicants. The frequency would be the highest among US companies, of which 30% would use grace periods frequently and another 42% occasionally. Unsurprisingly, European research institutions would also be relatively keen to use an unrestricted grace period: 20% of them would do so frequently, and another 40% occasionally. The cumulative share of frequent (14%) and occasional (28%) users is below 50% in the case of European companies. It is the lowest among Japanese and Korean companies, with 12% stating they would be frequent users and 27% occasional users, respectively.

Figure 4.3

Impact of balancing mechanisms on the frequency of grace period requests



Base: European companies (N=529), European research institutions (N=175), US companies (N=114), Japanese and Korean companies (N=135)
(Don't know responses are not reported).
Note: Respondents were asked to reply to the question "How would you use a grace period if Europe adopted a grace period according to the following scenarios: Grace period without restriction (~US system), Grace period with a declaration system only (~JP system), Grace period with prior user rights only (~Australian system), Grace period with a declaration system and prior user rights (~safety net)" by selecting one of the following options: "Never", "Only in exceptional cases", "Frequently", "Don't know".

Source: EPO survey on the grace period

In comparison, introducing a declaration system similar to that in Japan or R. Korea would likely reduce the use of the grace period in all EPO applicant categories except European research institutions. The difference is particularly dramatic in the case of US companies. The proportion of frequent users in this applicant category would fall from 30% to 2%, and the proportion of occasional users from 42% to 15%. European, Japanese and Korean companies also consistently show lower interest in using the grace period with a declaration requirement, although by a smaller margin.

However, European research institutions appear to be a major exception in this context. In contrast with companies from all the surveyed countries, respondents in this category report that they would be willing to use the grace period even more frequently if it were coupled with a declaration requirement to list pre-filing disclosures, which is a counterintuitive and somewhat internally inconsistent response. Specifically, 31% of the universities surveyed would use the grace period frequently, and another 37% occasionally. This finding seems to be consistent with the frequent use of the grace period by universities observed in Japan and R. Korea (see sections 2.4.1 and 2.4.2).

The other two scenarios, involving either a prior user right scenario) or a combination of a prior user right and a declaration system scenario), have the strongest deterrent effect on the use of a grace period. The two scenarios have relatively similar effects in this respect, with the proportion of frequent or occasional users limited to about 20% of respondents in all applicant categories. Again, European research institutions are the only exception: 34% of respondents in this category would be willing to use the grace period frequently or occasionally in a safety net scenario, and 24% in a prior user right scenario.

These outcomes confirm the findings of the Europe Economics study of 2014, which showed that the greatest deterrent to the use of the grace period, and thus the most effective mechanism to enhance legal certainty by reducing the use of the grace period for strategic purposes, was the availability of prior user rights for third parties.

4.2.2 Legal uncertainty

The assessment of the economic impact of the grace period involves investigating the fundamental trade-off between, on the one hand, the benefits of additional flexibility for the applicant using the grace period and, on the other, the ensuing legal uncertainty for third parties.

The survey does not capture the impact of legal uncertainty on third parties who are not EPO applicants. Even so, by surveying users on the various scenarios we have been able to gather input on the systemic ramifications of the legal uncertainty deriving from the increased difficulty in establishing whether a disclosure has become part of the public domain and, as such, forms part of the prior art, which would potentially affect all stakeholders in the innovation process, both applicants and third parties.

To understand the overall effect of the grace period on the patent system, therefore, we need to assess the impact of different grace period models on legal uncertainty. This impact depends on the extent to which the grace period is used and on the distribution of the legal risks associated with the grace period between applicants and third parties.

The results presented in the previous section (see Figure 4.3) indicate that an unrestricted policy scenario would trigger the largest number of grace period requests and, therefore, the highest level of legal uncertainty from a quantitative perspective. In contrast, the declaration, prior user right and safety net scenarios would significantly reduce the overall use of the grace period (bearing in mind that even in the declaration scenario the frequent use of the grace period by universities would generate only a relatively small number of requests – see section 4.1).

However, the mere number of grace period requests does not fully account for the role played by balancing mechanisms in managing legal uncertainty. In order to further identify their impact, a part of the survey was dedicated to the respondents' perceptions of legal uncertainty in each policy scenario. For this purpose, respondents were asked to reply "as third parties potentially expose" to patents for which a grace period has been invoked. However, their answers must still be interpreted with caution, since respondents may keep the applicant perspective when responding and third parties who are not EPO applicants had not been invited to participate in the survey.

Figure 4.4 reports on the respondents' perceptions of legal uncertainty under each policy scenario. It confirms, first and foremost, that all categories of applicants consider the unrestricted grace period scenario to be the one that generates the most legal uncertainty. European companies express the strongest concerns in this respect: three quarters (74%) report that an unrestricted grace period would generate a significant level of legal uncertainty, and close to half (44%) consider that level unacceptable. A majority of European research institutions (57%) and Japanese or Korean companies (50%) likewise expect a significant level of legal uncertainty with an unrestricted grace period, with 22% and 17% respectively qualifying that level as unacceptable. In comparison, only a third of US companies expect an unrestricted grace period to generate a significant level of legal uncertainty, and 10% of them consider that level unacceptable. This latter result can be explained by the fact that US companies are already used to an unrestricted grace period in their domestic market.

Figure 4.4

Impact of balancing mechanisms on legal uncertainty

Base: European companies (N=564), European research institutions (N=180), US companies (N=118), Japanese and Korean companies (N=140)
(Don't know responses are not reported).
Note: Respondents were asked to reply to the question "As a third party potentially exposed to such patents, how do you assess the impact of the legal uncertainty that would ensue if a grace period were introduced in Europe?" for each of the following scenarios: Grace period without restriction (~US system), Grace period with a declaration system only (~JP system), Grace period with prior user rights only (~Australian system), Grace period with a declaration system and prior user rights (~safety net) by selecting one of the following options: "No legal uncertainty", "Small and acceptable level of legal uncertainty", "Significant but acceptable level of legal uncertainty", "Unacceptable level of legal uncertainty", "Don't know".

Source: EPO survey on the grace period

All EPO applicant categories also consistently rank the prior user right scenario second when assessing the level of legal uncertainty. However, a bias is likely in this case since the prior user right implies a transfer of risk from third parties that develop derived inventions to the applicant invoking the grace period, which is not in the applicant's interest. European companies and research institutions express the strongest concerns: 60% and 50% of respondents respectively expect a significant level of uncertainty, and 29% and 22% consider that level to be unacceptable. Japanese and Korean companies also report that the prior user right (which is not available to third parties having derived the invention from a pre-filing disclosure by the applicant in their domestic system) would generate more legal uncertainty than a declaration requirement (already implemented in Japan and R. Korea) or even a safety net scenario. For US companies, the level of legal uncertainty associated with a prior user right (which cannot accrue during the grace period in the US system) is comparable to that of the unrestricted grace period. This may be an indication that applicant bias has crept in, despite the request in the survey question to consider the issue from a third-party perspective.[66]

The remaining two scenarios, the declaration scenario and the safety net (combined declaration system and prior user right) scenario, were found to minimise legal uncertainty for all categories of respondents. European and US companies consider these two scenarios to be roughly equivalent with respect to legal uncertainty. However, European research institutions and Japanese and Korean companies seem to have more concerns about the safety net. This suggests once again that research institutions perceive the prior user right (which is part of the safety net) as a risk factor from an applicant perspective. As research institutions do not manufacture and, as third parties, are thus unlikely to be the beneficiaries of prior user rights, their perception may be influenced by the awareness that prior user rights would only be relevant to them as patentees – whose monopoly could be impacted by such rights. So again they appear to assess legal uncertainty in this respect from a patentee's rather than, as requested in the survey, a third party's perspective. The Japanese and Korean applicants' responses must be interpreted with caution due to the limited sample size, but may reflect a preference for a system that they already know and practise.

4.2.3 Summary of the results

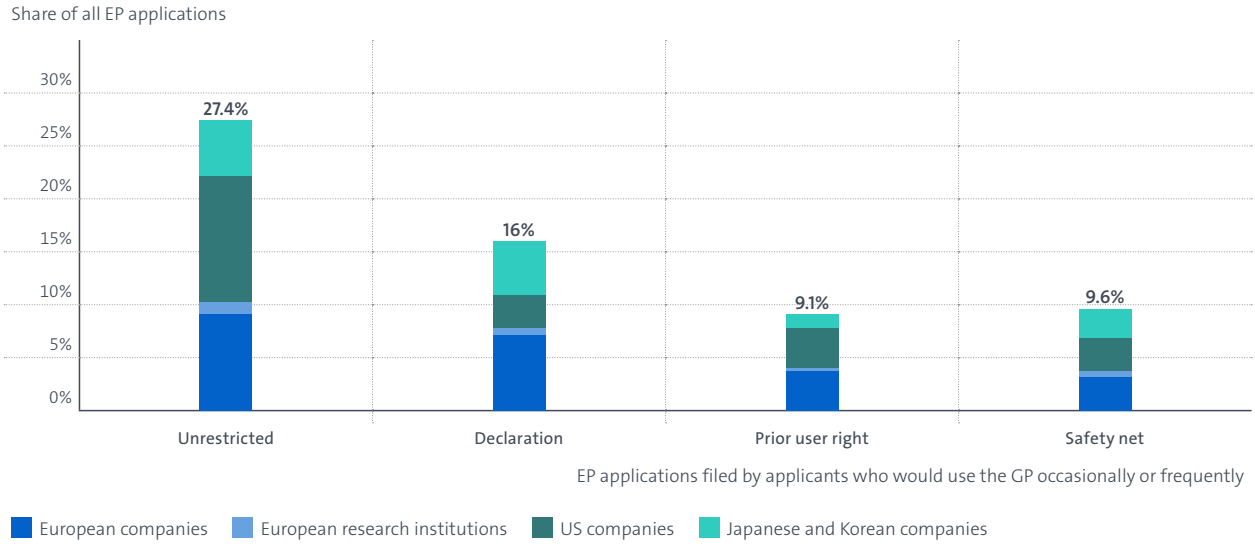
Figure 4.5 provides an overview of European applicants' assessments of the impact of the four policy scenarios on the frequency of use of the grace period and the level of legal uncertainty. While the results have thus far (see Figures 4.3 and 4.4) been reported in terms of the share of respondents within each applicant category, the results shown in Figure 4.5 reflect the numbers of patent applications filed by the respondents. Specifically, Figure 4.5.a compares, for each policy scenario, the estimated share of European patent applications filed by respondents who would frequently or occasionally use the grace period. In turn Figure 4.5.b shows, for each policy scenario, the estimated share of European patent applications filed by respondents for whom the grace period would generate significant legal uncertainty.

66 It is hard to fathom how the legal uncertainty inherent in a system which provides no protection to third parties for their activities should a patent be granted despite a pre-filing disclosure, could be considered lower than the legal uncertainty presented by a system in which third parties know that if their qualifying activities meet the requirements, they may benefit from prior user rights, which would protect their innovation investments. This seems to suggest, therefore, that respondents were inclined to take the applicant perspective. After all, in this scenario, respondents will not know whether prior user rights may be claimed against the granted patent, as opposed to the unrestricted scenario in which they can be certain that their patents will be shielded from such rights arising. It must be pointed out here that in all countries except the US, independently of the design of the grace period, prior user rights may arise until the filing/priority date as a consequence of the prior use of independent inventions made by third parties. This constitutes a baseline of legal uncertainty which is not influenced by the grace period per se. However, as far as the design of the grace period is concerned, if derivation from the inventor is permitted to ground prior user rights, this does not so much increase legal uncertainty for applicants, insofar as legal uncertainty is a state imposed upon stakeholders; it rather increases risk should the grace period be used, and the decision whether to use the grace period or not lies within the control of the applicant.

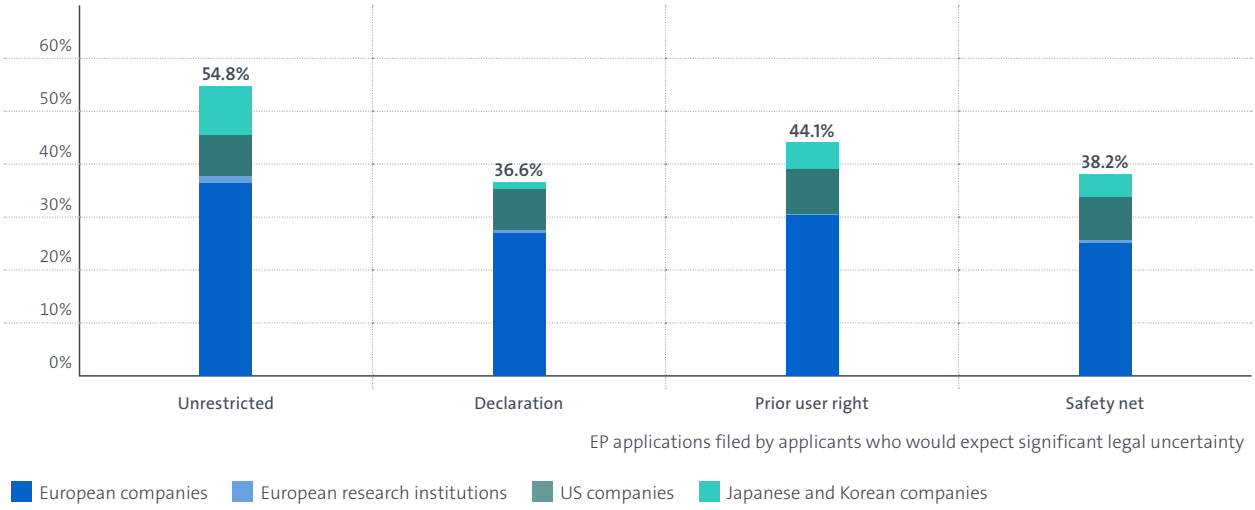
Figure 4.5

Estimated impact of four policy scenarios

a. Frequency of use of the grace period



b. Perception of legal uncertainty



Note: Responses of participants are weighted by their volume of EP applications
The results reported are estimated shares of all the European patent applications filed by the respondents in the last three years. They have been calculated by using survey data as a first step to calculate, within each category of EPO applicants (i) and for each scenario (j), the patent-weighted shares (Aij) of respondents reporting an occasional or frequent use of the grace period (Figure 4.5 a) or a significant level of legal uncertainty (Figure 4.5 b). As a second step, the overall share (Sij) of European patent applications for which respondents in a given category (i) report an occasional or frequent use of the grace period (Figure 4.5 a) or a significant level of legal uncertainty (Figure 4.5 b) in a given scenario (j) has been calculated by multiplying the average share Aij of those respondents within their category by the share Bi of this category of respondents in all European patent applications according to the EPO Patent index 2021 (i.e., Sij =.Aij * Bi for category I and scenario j).

Source: EPO survey on the grace period

A simple comparison of both parts of Figure 4.5 firstly shows that the proportion of European patent applications which, according to their respective applicants, would be exposed to significant legal uncertainty after the creation of a grace period far exceeds the proportion of patent applications for which the grace period may be invoked frequently or occasionally.[67] While these measures cannot be interpreted as direct forecasts of the frequency of grace period requests and legal uncertainty, the discrepancy clearly confirms the systemic effect of the grace period, despite the fact that the analysis does not capture the additional impact of legal uncertainty on third parties who are not EPO applicants.

A closer analysis of the different scenarios indicates that an unrestricted grace period would yield both the highest frequency of use of the grace period and the highest level of legal uncertainty as a result of that use. In this scenario, US companies would be the main users of the grace period (accounting for 44% of all potential requests), whereas legal uncertainty would mostly impact European companies (in 65% of cases).

Against this backdrop, it can be concluded that the introduction of balancing mechanisms has an important deterrent effect on grace period requests. As compared with the unrestricted grace period scenario, the share of patent applications exposed to frequent or occasional use of the grace period drops by 40% with a declaration requirement approach, and by 66% with a prior user right or a safety net approach. This suggests that the prior user right (which is also part of the safety net model) is a more powerful deterrent than the declaration requirement. However, it would seem that the declaration requirement and the safety net model (which includes a declaration requirement) would have a stronger negative impact on the share of grace period requests stemming from US companies.

The introduction of balancing mechanisms also reduces the share of European patent applications which are exposed to significant legal uncertainty. While EPO applicants who expect significant legal uncertainty account for a majority (55%) of European patent applications in the case of an unrestricted grace period, they represent a minority (37% to 44%) when balancing mechanisms are introduced. The apparently greater legal uncertainty associated with the prior user right must be interpreted with caution. As discussed in section 4.2.2, it is likely to reflect a bias among respondents, who tend to perceive legal uncertainty from the applicant perspective rather than as "third parties" exposed to the risk of infringing patents stemming from graced disclosures. Therefore, such perceived legal uncertainty may be argued to actually constitute a further deterrent to the pro-active use of the grace period.

It is also noticeable that European research institutions, which would be expected to make the most intensive use of the grace period, are hardly visible in the proportion of European patent applications that may be subject to grace period request or exposed to legal uncertainty. Specifically, their contribution to potential grace period requests does not exceed 1% of all European patent applications in any scenario, thus denoting a minimal impact on third parties.

Finally, it is noteworthy that the assessment of legal uncertainty by US companies remains constant across all scenarios[68], whereas all other categories of applicants expect that the introduction of balancing mechanisms will increase legal certainty.

The significant deterrent effect of introducing balancing mechanisms, which would reduce the number of grace period requests, arguably demonstrates their importance in attempting to mitigate the legal uncertainty which would be introduced if a grace period were to be adopted in a patent system which previously operated without one.

67 Depending on the policy scenarios, the ratio of these proportions ranges from 2-to-1 (when the grace period is the most frequently used) to 5-to-1 (when the grace period is the least frequently used).

68 Figure 4.5.b. provides an illustration of a phenomenon related by the IP Federation in their detailed and thoughtful submission to the consultation of user associations. In the discussions taking place within the Industry Trilateral, only European stakeholders "take seriously the threat of potential destabilisation of the patent system if an international first-to-publish grace period were to be agreed". Stakeholders from Japan and the US "see their own grace period provision and note that it is not used all that frequently, particularly by global players, without factoring in the braking effect of the EPC as it currently stands. If an internationally harmonised grace period were to be adopted, that braking effect would need to be replaced by features in national laws to provide disincentives to pre-filing disclosures and preventing the system from becoming first-to-publish – only BusinessEurope appears to appreciate the validity and importance of this element".

4.3 Input on the grace period gathered from user associations

The survey methodology adopted for this study is subject to some general limitations, pertaining in particular to the ability of EPO applicants to correctly anticipate all the complex ramifications of the impact of a European grace period. In order to address such limitations, the survey was complemented by a consultation of representative associations and federations of EPO users and stakeholders in Europe.[69] The contributions from 17 such associations have provided valuable insights into systemic effects of the grace period that may not be perceived by all applicants.[70] While the present section focuses on the outcome of this consultation, the results of complementary consultations carried out and kindly shared by the Spanish Patent and Trademark Office (OEPM) and Portugal's Institute of Industrial Property (INPI) in 2021 are also reported, respectively, in Annex 2 and Annex 3 of this report.

Table 3.2

List of user associations that have contributed to the consultation

Name	Jurisdiction	Category of EPO users or stakeholders
Association of European Science and Technology Transfer Professionals (ASTP)	Europe	Research institutions
BusinessEurope	Europe	Industry
Bundesverband der Deutschen Industrie (BDI)	Germany	Industry
Confederación Española de Organizaciones (CEOE)	Spain	Industry
Confederation of Netherlands Industry and Employers (VNO-NCW)	Netherlands	Industry
IP Federation	United Kingdom	Industry
Union des Fabricants (UNIFAB)	France	Industry
BIO Deutschland	Germany	Biotechnology sector
International Association for the Protection of Intellectual Property (AIPPI)	International	IP professionals
Union of European Practitioners in Intellectual Property (Union IP)	Europe	IP professionals
Association française des Spécialistes en Propriété Industrielle de l'Industrie (ASPI)	France	IP professionals
Vereinigung von Fachleuten des Gewerblichen Rechtsschutzes (VPP)	Germany	IP professionals
Institute of Professional Representatives before the European Patent Office (EPI)	Europe	European Patent Attorneys
European Federation of Intellectual Property Agents in Industry (FEMIPI)	Europe	Patent attorneys
Chartered Institute of Patent Attorneys (CIPA)	United Kingdom	Patent attorneys
Compagnie Nationale des Conseils en Propriété Industrielle (CNCPI)	France	Patent attorneys
Patentanwaltskammer (PAK)	Germany	Patent attorneys

Broad support for substantive patent law harmonisation in principle

Most contributions (AIPPI[71], BDI, BIO Deutschland, CIPA, EPI, FEMIPI, IP Federation, Union-IP, VNO-NCW, VPP) welcome the general principle of harmonising substantive patent law at the international level as a means to provide significant economic benefits to applicants in having a single, simple system that is based, essentially, on a grace period.

69 The associations were contacted via email and received the questionnaire in December 2021. Some replied in writing, others requested online meetings to discuss issues; those meetings were held in early 2022. These associations then followed up with written contributions.

70 Besides commenting on the impact of the grace period, some consulted associations criticised the design of the present study. They argued that the potential impact of the introduction of a grace period in Europe should be assessed only from the perspective of European applicants and that US, Japanese and Korean applicants should not have been included in the survey population. While the study is agnostic as to which stakeholders' interests should be taken into account when assessing the introduction of a grace period in Europe, the purpose of the survey is to evaluate the extent to which all categories of EPO applicants might use the grace period if it were introduced in Europe. In this context, excluding important categories of applicants such as US, Japanese and Korean companies would have made it impossible to correctly assess the full baseline potential uptake of the grace period among EPO applicants and its impact on legal uncertainty. Some user associations also opined that the survey was necessarily biased because the surveyed population did not include third parties who were not EPO applicants but would nevertheless be exposed to increased legal uncertainty should a grace period be introduced in Europe. The fact that these third parties have not been included is due to the practical impossibility of surveying such a population. This is a limitation of the study, duly acknowledged as such in this report. In an attempt to mitigate this limitation, we included a section in the survey in which respondents were specifically asked to adopt the perspective of a third-party competitor; this was also the main reason for the separate consultation of user associations.

71 AIPPI's submission was spontaneous, as this organisation was not approached by the EPO for the purposes of the study (the pool of respondents being confined to European associations).

Deep divisions among stakeholders in Europe regarding the grace period

However, when it comes to the grace period itself, the submissions reveal deep divisions among stakeholders in Europe, not only between user associations, but within them as well.[72] A case in point is that BusinessEurope (the leading European federation of national industry associations), while encouraging its member federations to contribute to the study separately, was unable to agree internally on common and uniform input for the study. Perhaps even more importantly, support for the grace period among European stakeholders is rarely unconditional.

Concerns shared by proponents and opponents of the grace period

Some concerns are shared by many respondents regardless of whether they support the grace period or oppose it: (1) the issue of increased legal uncertainty, (2) increased complexity, (3) the need to maintaining a balance between the interests of applicants and those of third parties, and (4) a need to preserve the "file-first, disclose late" paradigm as best practice.

Positions against

Some user associations (CNCPI, CEOE) reject the idea of a European grace period. An important reason for this position is that the introduction of a grace period, by making it more difficult to determine the validity of patents, would increase the legal costs for all parties involved at different stages of the business process such as freedom-to-operate opinions, patent prosecution and opposition procedures, and litigation (CEOE; EPI, although not opposed to the grace period, makes a similar point). In particular, in the age of the Internet, identifying the origin of a disclosure may create difficulties, leading to legal uncertainty (CNCPI). While bringing improvements in specific cases, the system would create problems of its own (increased complexity and legal uncertainty) which would have a negative impact on all stakeholders, applicants as well as third parties (CNCPI). Moreover, it was argued that the grace period would modify the existing balance of interests in the European patent system by essentially privileging the interests of inventors/applicants over those of third parties and the public at large (CEOE). Finally, even opponents expect that the introduction of a grace period in Europe would have a positive impact on patent professionals, as it would in all likelihood lead to an increase in patent application filings (CNCPI). The fear, however, is that in practice, the introduction of a grace period would mainly benefit foreign users (and in particular US users) rather than European users (which is confirmed by this study), thereby increasing the volume of patents owned by foreign users and causing problems for European entities due to their restricted freedom to compete (CEOE, EPI). In addition, some user associations warn that the grace period can lead to a false sense of security, since it does not protect the inventor (who discloses his invention prior to filing) from third-party improvements on his disclosed invention, which, if disclosed or filed for, may either render the original discloser's invention unpatentable due to lack of inventive step, or result in an inability to obtain a meaningful scope of protection (EPI).[73]

Internationally harmonised grace period only if implemented as a safety net

Other user associations (BDI, EPI, FEMIPI, IP Federation, PAK, VNO-NCW, VPP) indicate that they might consider the introduction of the grace period only as a means to secure worldwide substantive patent law harmonisation, usually on condition that it be implemented as safety net (i.e., with a declaration requirement and prior user rights) so as to minimise its use and the resulting legal uncertainty.[74] Some (FEMIPI, VPP) consider that the introduction of a grace period would necessarily reduce legal certainty, the preservation of which is considered very important by many European users. Any increased legal risk due to legal uncertainty will adversely affect the quality and speed of business decisions, and thus have a potentially negative economic impact. Moreover, a substantial increase in legal uncertainty is expected to lead to an increase in the volume of patent litigation (VNO-NCW). Having considered the scenarios presented in the survey and circulated the questionnaire among its members, UNIFAB concluded that an unrestricted,

72 For instance, the Patent Commission of UNION-IP is against the grace period, but a minority of its members are in favour, so that both positions were explained in the association's submission. Likewise, some VNO-NCW members believe there might be benefits to a grace period (defined as a limited safety net) in an open-innovation context, but other members disagree with this view.

73 Although it could also be argued, conversely, that the grace period may accelerate the invention of such improvements, which is in line with the objectives of the patent system and benefits the public in the long term.

74 EPI adds the caveat that it might consider a grace period "that was a true safety-net as part of a harmonised system which was a true first-to-file system".

US-style grace period, or one modelled on the Australian approach of robust prior user rights but no declaration requirement, would result in an unacceptable level of legal uncertainty, whereas a grace period either with a declaration requirement or designed as a safety net with a declaration requirement and prior user rights, would result in a significant, yet ultimately acceptable level of legal uncertainty.

As a guide in making policy decisions, it is suggested that the following factors should be taken into account: (a) the interests of the patent applicant, (b) the legitimate interest of a third party in being able to adopt a technical innovation in the absence of a patent right, (c) early transparency on an innovation allowing the development of improvements and alternatives, and (d) the interests of third parties burdened by patent protection (PAK, 2022).

Potential increase in the duration of legal uncertainty

Another concern among stakeholders is the potential increase in the duration of legal uncertainty should a grace period be adopted in Europe. As matters stand in Europe, there is a period of legal uncertainty of 18 months between the filing date or priority date and the date of publication of the patent application. During this period, third parties do not know whether a disclosure is accompanied by a corresponding pending patent application. Stakeholders have pointed out that with a 12-month grace period, the duration of this legal uncertainty stretches to 30 months. However, opinions are divided on how to deal with this: some user associations believe that requiring the applicant to file a declaration if the grace period is being invoked and then publishing the application 18 months from the date of the earliest pre-filing disclosure would be an appropriate and effective solution (CIPA, UNION-IP, VNO-NCW); others specifically reject such a course of action (AIPPI, PAK).

Importance of preserving the "file first" principle

Several user associations (AIPPI, CIPA, IP Federation, UNION-IP, VNO-NCW) specifically insist on the need for sufficient safeguards to preserve the "file first, disclose late" paradigm of the current system, thereby ensuring that the patent system in Europe would not become a "first-to-publish" system as a consequence of the introduction of an unrestricted grace period, particularly if it is internationally harmonised. Respondents within this sub-set, who are generally well-disposed towards the grace period, have expressed concerns about ensuring that a system designed as a safety net for potential applicants should not substantially shift the balance between the interests of patentees and third parties, advocating that the onus or risk should lie with the party making a pre-filing disclosure and subsequently seeking patent protection (VNO-NCW, 2022). The means considered appropriate to prevent a first-to-publish system include: the possibility for third parties who have been working independently to file patent applications, third-party intervening disclosures forming prior art, and – in particular – robust prior user rights (CIPA, 2022) which should become available even if the knowledge of the invention has been derived from a pre-filing disclosure (IP Federation), as a matter of fairness (CEOE).

Special needs of certain sectors

Several associations also emphasise that the need for the grace period is particularly felt in a small number of specific sectors, leading them to conclude that this may justify the introduction of a very restricted grace period and the inclusion of specific conditions relating solely to those sectors (CNCPI, EPI, ASTP (Poland)). However, such arguments are also put forward to support the case for a grace period which would be generally applicable.[75]

Facilitation of joint ventures between academia and industry

Some associations (AIPPI, ASTP Community, BIO Deutschland, EPI, IP Federation, PAK) indicate that the grace period would support knowledge/technology transfer professionals, as well as companies that rely on collaboration in equal partnerships with academia, in commercialising academic research results. A European grace period would eliminate the academic researchers' dilemma of "publish or patent", allowing for a better conciliation of the needs of academia and industry. It would be expected to facilitate communication and collaboration between industry partners and scientists who usually give priority to publication or presentation opportunities, to enable the preparation of higher-quality patent applications, and to address the lack of

75 Note that within the context of international harmonisation efforts, only a general grace period is being envisaged, mainly on the grounds that creating exceptional regimes would only increase complexity and legal uncertainty, when international norms should aspire to be as simple and easy to apply as possible.

interest among industry partners in the downstream development of novel results when there is no potential patent protection. Another stated benefit of the international harmonisation of the grace period is that it would help to standardise the protection of inventions from university-industry collaborations in a global market. Although it "would not be a silver bullet to solve all the challenges of the knowledge transfer process", some (ASTP, 2022) consider it to be "an essential addition to the toolbox".

Pharmaceuticals and regulatory issues

Other contributions (BIO Deutschland, CNCPI, EPI, PAK) mention the specific case of clinical studies in pharmaceuticals and the novelty-destroying effect of the transparency requirement, under the EU Clinical Trials Directive[76], that a study protocol be disclosed prior to conducting the study. Some user associations (BIO Deutschland, PAK) further indicate that, in pharmaceuticals, inventions with the longest duration after market entry (such as personalised medicine or dosage patents) are often made during clinical trials. However, on the filing date of such inventions the EPO requires data that make the invention plausible. Since such data is often not available until after the study has been conducted (and the protocol published for regulatory compliance), the applicant is left with a choice between lack of novelty (because the protocol has already been disclosed) and lack of plausibility (because the trial data are not yet available). The same associations therefore recommend the introduction of the grace period as a means to alleviate this situation.

Collaborative standards industries

One contribution (EPI) also highlights the potential impact of the grace period in the context of the development of collaborative technical standards. The standards development process typically involves collaborative discussions during which parties submit technical contributions that may be subsequently adopted in the standard. These submissions may be regarded as public disclosures by some patent offices, including the EPO, and can thus be opposed to subsequent patent applications. Therefore, ensuring that patent applications are filed in advance is currently a prerequisite for many participants in standardisation before submitting technical contributions.

However, EPI points out that such a specific filing often does not provide a sufficiently broad priority right (under the EPO's view of priority) that can withstand small improvements or amendments inherent to the collaborative nature of the standard. Against this backdrop, introducing a grace period would enable the party that made the initial submission to also claim patent protection on additional elements stemming from the collaborative discussions that the EPO currently deems to constitute a public disclosure.

It must be noted here that the grace period, in a more general sense, would make it possible for the applicant to prevent such technical contributions from becoming prior art prejudicial to the novelty and inventive step of the corresponding patent application, allowing innovators to file patent applications after submitting their technical contributions. Such a shift would likely have a major impact on patenting in collaborative standards industries, as it would increase uncertainty on the IP status of technical contributions to collaborative standards, as well as the potential number of standard-essential patents, and could also negatively impact the requirement imposed by some Standard Development Organisations to declare essential patents and applications and thereby also the related FRAND commitment.[77]

76 Since this input, EU Regulation No. 536/2014 on clinical trials on medicinal products for human use entered into force on 31 January 2022, repealing EU Clinical Trial Directive 2001/20/EC, which had been in force since 2004. At the moment, there is no indication that the Regulation will improve this situation from the perspective of prospective applicants.

77 A recent study estimates that the EPO's policy of considering technical contributions to collaborative standards development setting discussions as public disclosures reduces the probability of standards-related essential patents being awarded by approximately 19 percentage points (Bekkers et al., 2020).

5. Conclusion

This section summarises the main findings of the study. It first highlights important differences between categories of EPO applicants as regards their respective needs for a grace period. It then discusses the likely impact and systemic effects of the four main policy scenarios that have been considered in the study for the implementation of a grace period in Europe.

5.1 EPO users' potential for using a European grace period

The survey results show that different categories of EPO applicants respond differently to the strict novelty requirement under the EPC, and that they would not all use the grace period in the same manner if it were to be introduced in the European patent system.

The data collected make it possible to estimate the extent of the difficulties faced by EPO applicants as a result of the lack of a grace period under the present system.

5.1.1 European companies

European companies are found to handle the current EPC-based system without too many difficulties, although some of them, especially among small businesses, might derive certain benefits from a European grace period. As European companies successfully comply with the EPC novelty requirement by postponing disclosures, they do not frequently experience any direct impact on innovation. SMEs tend to postpone or cancel disclosures more frequently than larger companies (10.4% versus 2.3%) and also more frequently report consequences for the development or commercialisation of inventions as a result of such postponements (32% versus 13%). However, the share of SME applications that were prevented by pre-filing disclosures is very low (1.0%) and close to that of other European companies (0.8%). Therefore, European companies in general manage to avoid the more serious consequences of being prevented from filing a European patent application.

European companies would be more inclined to use the grace period so as to bypass, on a voluntarily basis, their currently strict disclosure policies (proactive motive) than to salvage patent applications in the event of accidental pre-filing disclosures (safety net motive). Our estimates suggest that European companies that do not qualify as SMEs could potentially file about 500 grace period requests annually as a safety net to cope with accidental pre-filing disclosures, as well as another 1 450 grace period requests for proactive motives. The difference is even starker for SMEs, with less than 200 safety net requests and potentially more than 1 700 proactive requests.

If a grace period were introduced in Europe, the frequency of its use by European companies would therefore mainly depend on their incentives to do so in a deliberate, proactive manner, as an alternative to their current disclosure policies. Such incentives in turn would depend on the design of the grace period, and in particular on the deterrent effect of the balancing mechanisms that may accompany it.

5.1.2 European research institutions

Like European companies, European research institutions most often adapt to the strict novelty requirement by postponing scientific publications or communications, thereby mitigating the risk of novelty-destroying disclosures and obstacles to patent applications. However, they report much higher shares of patent applications with either delayed disclosures (12.1%) or pre-filing disclosures (7.8%) than European companies. This denotes an inherent tension between the need to disclose research results early in an open-science environment and the need to secure patent protection of those results in order to enable their commercialisation, as also emphasised by several representative EPO user associations. European research institutions also experience more severe economic consequences from pre-filing disclosures: 71% of their failed patent European applications entail lost opportunities to develop or commercialise the invention, compared to only 32% of failed patent applications for European SMEs and 13% for other European companies. Moreover, the reported issues typically concern science-based inventions that may present significant economic potential.

Although the negative impact of pre-filing disclosures is a powerful incentive for European research institutions to implement disclosure policies, it also signals a strong potential for using the grace period. Of all categories of EPO applicants, European research institutions show the highest proportions of cancelled patent applications due to pre-filing disclosures, which could lead to the use of the grace period as a safety net. They likewise have

the highest proportion of delayed disclosures which could be replaced by the proactive use of a grace period. That combined potential represents about 20% of the European patent applications of European research institutions, far above the total potential of European SMEs (11.4%) and other European companies (3.1%). However, its quantitative impact in systemic terms is very limited due to the relatively modest number of European patent applications filed by European research institutions with the EPO. Overall, we estimate their baseline potential at slightly more than 600 grace period requests per year, and at only 250 requests if European research institutions were disincentivised from using the grace period in a proactive manner. From a European perspective, remedying the issues faced by European research institutions would be one of the most persuasive policy reasons for the adoption of a grace period in Europe.

5.1.3 US, Japanese and Korean companies

Compared with European applicants, US, Japanese and Korean companies show a higher share of applications prevented by pre-filing disclosures than of applications that required the postponement of disclosures, as well as a higher share of scientific publications among the pre-filing disclosures compared to European companies. This demonstrates a more frequent failure of applicants from these countries to comply with the strict novelty requirement under the EPC, possibly due to the use of grace periods in their respective national patent systems.

There are however also important differences between US applicants on the one hand and Japanese and Korean applicants on the other, which likely reflect their respective experiences of the grace period in their domestic grace period systems. While the proportion of European patent applications that failed due to pre-filing disclosures is relatively low among Japanese and Korean companies (2.3%), it is more than three times higher among US companies (7.2%). The share of applications for which a disclosure had to be postponed or cancelled is even ten times higher for US companies (4.1%) than for Japanese and Korean ones (0.4%). It is also noticeable that only 54% of Japanese and Korean companies have adopted specific disclosure policies to adapt to the strict novelty requirement under the EPC, compared with 82% of US companies. This suggests that Japanese and Korean companies find it easier to comply with that requirement in Europe because they already have to comply with a domestic grace period comprising a strict declaration requirement. By contrast, it may be surmised that US applicants are used to an unrestricted grace period in their home jurisdiction, which may make it more difficult for them to comply with a strict novelty requirement for subsequent patent applications in Europe.

Against this backdrop, US companies would be by far the main potential users of the grace period if it were introduced in Europe. With an estimated baseline of 3 350 annual requests for the grace period as a safety net, and another 1 900 proactive requests, they alone would account for half of the potential number of grace period requests at the EPO. On the other hand, the survey results indicate that US companies would reap limited benefits from the grace period, since a small share (27%) of their failures to file applications in Europe due to pre-filing disclosures entailed serious economic consequences. However, our results also show that most US companies would waive strict disclosure policies in Europe and opt instead for proactive use of an unrestricted grace period if that option were made available, in line with their practice under the unrestricted grace period in their domestic market.

By contrast, Japanese and Korean companies have only a modest share (14%) in the total potential use of the grace period in Europe. Our estimates indicate that they could file about 840 grace period requests annually, most of which (85%) would be using the grace period as a safety net rather than proactively. The economic benefits of doing so would be more significant than for US companies, since 61% of their failures to file applications in Europe due to pre-filing disclosures had an impact on the development or commercialisation of inventions.

5.2 Scenarios for a European grace period

The analysis of EPO applicants' responses to the strict novelty requirement under the EPC provides a basis for assessing the potential uptake of a grace period in Europe. Should a grace period be introduced in Europe as a result of an internationally harmonised grace period, the changed legal framework would almost certainly result in (a) changed disclosure policies and hence in (b) modified behaviours among applicants. Although our methodology aims to capture such changed behaviours, it does not account for behaviours which go beyond the mere remedying of current difficulties and move into a more strategic use of the grace period, that option being available, and the EPC no longer forming an obstacle to the use of the grace period in foreign jurisdictions.[78] Of

course, the extent of such policy and behavioural changes would be influenced by the design of the grace period.

Once the baseline data establishing the impact of the current strict novelty requirement is complemented by additional survey questions and expert contributions from representative EPO user associations, it will be possible to compare the expected impact of different policy scenarios on the potential uptake of a grace period in Europe, and assess its ramifications for the European patent system.

5.2.1 Potential number and main drivers of grace period requests

Estimates derived from the EPO applicant survey results, based on current difficulties experienced, suggest a potential of about 10 000 annual grace requests at the EPO (i.e. 6% of all European patent applications filed in 2021) if the grace period were introduced in Europe. Half of this potential would stem from the use of the grace period as a safety net in the event of accidental disclosure, and the other half from the deliberate use of the grace period as an alternative to the postponement or cancellation of disclosures.

Overall, more than 80% of this potential stems from the use of the grace period by two applicant categories, namely US companies (50% of the total) and European companies (37%). While US companies would use the grace period as a safety net to salvage European patent applications in two thirds of cases, the potential use of the grace period by European companies would be driven by proactive motives in 83% of cases. Therefore, whether the European patent system would move away from a strict filing-first system to a looser first-to-publish system crucially depends on the design of the grace period, i.e. whether it would contain sufficient incentives to maintain current disclosure policies or whether it would provide an environment where applicants would opt instead for a proactive use of the grace period, particularly on the part of US applicants, which form 25% of the EPO user base and benefit from an unrestricted grace period in their domestic market.

In any case, the survey results indicate that the grace period, if its use remained commensurate to the proportion of cases in which difficulties are experienced in the current system, would in all likelihood be invoked for only a small proportion of European patent applications.

The EPO applicant survey offers further insights into the systemic impact of the introduction of a grace period. By documenting the users' perception of the legal uncertainty deriving from the increased difficulty in establishing whether a disclosure has become part of the public domain and, as such, forms part of the prior art, the survey provides us with a measure of the potential impact of such uncertainty on all stakeholders in the innovation process, both applicants and third parties. It also reveals important differences between the systemic impacts of the different grace period scenarios.

5.2.2 Unrestricted grace period and balancing mechanisms

The scenario of an unrestricted grace period (US model) would have the strongest impact on the balance of the European patent system. It would yield both the highest frequency of use of the grace period and the highest level of legal uncertainty as a result. US companies would be the main users of the grace period in that scenario (accounting for 44% of all potential requests), whereas legal uncertainty would mostly impact European companies (perceived in 65% of cases). This finding supports the argument – formulated by several representative associations of EPO users – that non-European applicants would benefit from significantly enhanced possibilities to protect their inventions in Europe if a grace period were introduced. This would increase the volume of their patents in Europe and thus reduce legal certainty and restrict freedom-to-operate especially for European companies in their domestic markets.

Against this backdrop, our analysis shows that the introduction of balancing mechanisms can have an important deterrent effect on grace period requests. Compared with the unrestricted grace period, the share of patent applications which would be exposed to frequent or occasional use of the grace period requests drops by 40% with a declaration requirement (Japanese and Korean model), and by two thirds with the availability of prior user rights (Australian model) or a safety net (combining a declaration requirement and prior user rights). This effect is particularly strong among US companies, whose share of patent applications for which

78 On this point, see footnote 57**.

the grace period would be used frequently or occasionally drops by 75% when one or more balancing mechanisms are introduced.

The balancing mechanisms likewise significantly reduce legal uncertainty. EPO applicants who anticipate significant legal uncertainty as a result of an unrestricted grace period account for a majority (55%) of European patent applications. However, they become a minority (of 37% to 44% of European patent applications) when balancing mechanisms are introduced. It is noteworthy that the assessment of legal uncertainty by US companies remains constant across all scenarios, whereas all other categories of applicants expect that the introduction of balancing mechanisms will increase legal certainty.

It should also be noted that all categories of EPO applicants associate the availability of prior user rights with higher legal uncertainty and a lower frequency of use. This seems to reflect a bias among survey respondents, who tend to perceive legal uncertainty from the applicant perspective rather than as "third parties" exposed to the risk of infringing patents stemming from graced disclosures. As a result, the prior user right can be regarded as a further deterrent to the pro-active use of the grace period. This is especially the case for European companies, whose share of patent applications exposed to frequent or occasional use of the grace period would drop by half if prior user rights were introduced.

5.2.3 The challenge of harmonisation

The policy debate on the introduction of the grace period in Europe is primarily driven by ongoing efforts to achieve international substantive patent law harmonisation – Europe and P.R. China being currently the only two major jurisdictions in the world without a full-fledged grace period. This was clearly emphasised in the contributions of representative EPO user associations. Most of them welcome the general principle of harmonising substantive patent law at the international level and acknowledge that the introduction of a grace period in Europe is a necessary element of such harmonisation. However, many also express strong concerns about the potential impact of the introduction of a grace period on the balance of the European patent system – which largely depends on the chosen grace period design.

The survey results confirm the importance of that design, thereby highlighting the challenge of international harmonisation on one or another system. This is visible in the responses of non-European EPO applicants, who show a clear tendency to favour their domestic practices. US applicants would in any case be the main users of a European grace period, with a strong preference for an unrestricted grace period comparable to the one in place in their own jurisdiction. While 72% of them would be willing to use the grace period frequently or occasionally in this scenario, that proportion falls to 21% or less in the other three, more restrictive scenarios (see Figure 4.3). Unlike all other applicant categories, US applicants also do not expect an unrestricted grace period to significantly increase legal uncertainty (see Figure 4.4). By contrast, the estimated number of European patent applications for which Japanese and Korean applicants would use the grace period frequently or occasionally is the same with the unrestricted grace period and the declaration system, but it drops when a prior user right is introduced (see Figure 4.5), reflecting perhaps a reaction to a disincentive which does not exist in their own patent systems. Japanese and Korean applicants also consider that a declaration requirement similar to their domestic ones would minimise the legal uncertainty to which they are exposed (see Figure 4.4).

Although European applicants have less experience of specific grace period systems, the survey results provide some important insights into their specific needs and expectations. European applicants would use the grace period frequently – and to some extent proactively – if it is unrestricted or subject to a declaration requirement, but much less so if prior user rights are available, possibly combined with a declaration system in a safety net scenario (see Figures 4.1 and 4.3). At the same time, European applicants believe that the unrestricted grace period would generate a higher level of legal uncertainty than other scenarios[79] (see Figure 4.4), and that they would be largely exposed to this uncertainty (see Figure 4.5). Against this backdrop, a number of representative EPO user associations advocate the safety net scenario. They emphasise in particular that the current "first-to-file" system must be prevented from evolving into a "first-to-publish" system, by ensuring that balancing mechanisms prevent applicants in Europe from proactively using the grace period as an alternative to

78 As discussed in section 4, their perception of the prior user right (and, by extension, of the safety net) as a factor of uncertainty seems to reflect an applicant perspective, rather than a third-party perspective, as evidenced by the strong deterrent effect of the prior user right on their use of the grace period.

their strict disclosure polices. Several contributions even suggest that the introduction of a restricted grace period should mainly target a small number of specific sectors, such as academic research and clinical studies, in which the need for the grace period is most seriously felt.

Two of the main takeaways of this study of value for internal discussions on the matter within Europe as well as for the international harmonisation process are that the uptake of a grace period in Europe should not be expected to be even across all categories of users, and that such uptake is likely to be greatly influenced by the design of the grace period. The findings of this study give us insight into the potential for change if a grace period were to be adopted in Europe, and the grace period's usefulness, in particular for European stakeholders, relative to the potential disruptions it could be expected to cause.

Annex 1 Survey methodology

A.1.1 Survey

The main objective of this survey was to collect information on how EPO applicants are affected by the strict novelty requirement of the European Patent Convention, which does not provide for a grace period. Further objectives were to measure instances in which the disclosure of an invention was prevented prior to filing a European patent application and instances of a pre-filing disclosure forming an obstacle to patentability and thus to the filing of a European patent application. Finally, the intention was to assess EPO applicants' reactions to the possible introduction of a grace period in Europe. These objectives served as the basis for defining the survey questionnaire, the target population and the quota stratification of the sampling.

The target population was defined as applicants who had filed one or more applications with the EPO in recent years. This population was classified into two major groups: universities and public research organisations (UNI-PROs) and private enterprises (companies). For each of the two groups a slightly different questionnaire was designed and used for the interviews, in order to cover specific aspects of each group.

The quota stratification was designed to collect information in certain regions of interest and by type of applicant organisation (UNI-PRO, company – SME, company – non-SME). A disproportional stratification was chosen with the focus on achieving a sufficient number of interviews in each strata cell in order to reduce error margins in the analysis. The main regions of interest were Europe, the United States, Japan and R. Korea.

The survey interviews were conducted using mixed methods: CATI (computer-assisted telephone interviews) and CAWI (computer-assisted web interviews).

A.1.2 Questionnaire design

In order to design the survey questionnaire, questions had to be tested under real-life interview conditions. To that end, pilot interviews were conducted to test:

- whether the wording of the questions worked in practice
- whether the questions were clear, and whether any explanatory notes or briefings were needed for the interviewers
- the interview length

Pilot interviews began on 22 September 2021. Since the survey was to be held among two different types of organisations, UNI-PROs and companies, the pilot interviews covered the questionnaires for both groups.

A.1.3 Survey programming

Once the final questionnaire was designed, the survey was prepared for programming. Each of the five language versions (English, German, French, Japanese and Korean) was programmed separately in a CATI and a CAWI version for the UNI-PRO and the company questionnaires. A master version was programmed first and then used as a template for all other language versions, to ensure that all versions shared the same technical basis.

The master version underwent a two-step check. The first step was to test the survey logic for errors. The survey logic covered:

- question routing
- display logic
- rotation/randomisation

To this end, test interviews were conducted covering the different routes through the survey and texts to be displayed. The logic and data capture were checked and any errors were corrected. After starting the fieldwork (after approximately 30 and 100 full interviews had been conducted), the logic and data capture under real conditions were checked again.

After the master version was released, all different language versions based on it were created.

Finally, all five language versions were reviewed by native speakers and corrections were made where necessary. After the language check, the surveys were released so that the interviews could begin.

A.1.4 Sampling

Sampling is the process of selecting a subset of the population for data collection based on a study's objectives and target population.

For this study, the target population consisted of organisations that had filed at least one application with the EPO within the past three years. Furthermore, the study focused on the regions where organisations in the sampling (sample units) were located, i.e. Europe, United States, Japan and R. Korea. Finally, the sample was based on type of entity (UNI-PRO, SME or non-SME).

The type of applicant organisation and the region were pre-defined and assigned to each sample unit, covering UNI-PRO, company – SME, company – non-SME and the regions of Europe, the United States, Japan and R. Korea. However, the information provided in the sampling was not always sufficient to assign the type of organisation definitively. In such cases, the classification of the applicant's organisation had to be verified during the interview, i.e. from the net sample.

The sample base for this study follows the sampling of the EPO PFS study (European Patent Office – Patent Filing Survey) with its survey waves 2021, 2020 and 2019. It provided a random sample of all the applicants who had filed requests with the EPO in 2021, 2020 or 2019, constituting a representative sample of the defined target population. The sample parts of the three waves were merged, de-duplicated and consolidated.

The quota stratification was designed according to the defined subgroups of interest in the target population. Therefore, the design generated disproportionate strata cells so as to provide enough samples in the net sample subgroups to reduce their error margin. This led to the use of an additional boost sample to support the filling of certain strata cells, but with a considerably smaller sample size. These boost samples were drawn from the EPO UNI-PRO study and EPO SME study of 2019 and 2020 respectively.

In general, quota stratification was designed to provide a sufficient number of interviews in each cell. The quota strata of "European SME: Eastern European" and "European SME: Southern European" were disproportionately larger than their real shares in the population. This fact required additional boost samples in these two strata. For the strata cell of US companies, an additional sample was used as well, although the cell provided a supposedly sufficient sample size. This additional sample was required because the response rate of the target population in the US was considerably lower than in Europe.

Table A.1.1

Quota stratification design

Type of organisation		Country / Country group	Target (N)	Sampling (N)	Boost Sampling (N)
UNI-PRO		Europe	150	505	-
		Japanese + Korean	50	116	-
		US	50	71	-
		Total	250	692	0
Companies	**SME**[1]	European SME: Eastern European[2]	60	88	580
		European SME: Southern European[3]	60	594	3 868
		European SME: Other European	180	3 110	15 082
	non-SME[1]	European non-SME: All	150	3 399	-
	SME + non-SME	Japanese + Korean	100	689	-
		United States	100	3 427	4 083
		Total	650	11 307	23 613

1 The classification into SME and non-SME was based on specific information on filing power and/or number of employees, if available in the sampling. The classification was not final, therefore, but determined by the likelihood of what group the companies may fall under. The actual classification was eventually identified by the answers given in the survey interview.

2 Countries included: Bulgaria, Czech Republic, Hungary, Estonia, Poland, Latvia, Lithuania, Romania, Slovakia

3 Countries included: Croatia, Cyprus, Greece, Italy, Malta, Slovenia, Spain

A.1.5 Fieldwork

Fieldwork started on 22 September 2021 with pilot interviews, in order to test the questions with real-life respondents. The fieldwork period was closed on 8 March 2022.

The population was divided across the different language and questionnaire type versions of the survey software. A database sample management system was used for quota control, monitoring and interviewer management.

For fieldwork management, each sample unit was randomly assigned to assembled batches. The batches were processed sequentially, after each batch was exhausted. The sample units were selected at random within each batch. Therefore, all units within a batch were initially equally likely to be contacted for the first time. Since the units remained, their probability rose as the fieldwork progressed. Depending on the outcome of the initial contact attempt, the units were put on a list to be automatically contacted again, an appointment was made to call or email the contact or target person of the company, or the caller noted that the companies should not be contacted again (e.g. because they had declined to participate). This automated procedure determined when a company was to be re-contacted, and by which interviewer, if a previous contact had not produced a definitive result. The automatic re-suggestion maximised the use of the gross sample and compensated for fluctuations in the likelihood of a response between the different strata as effectively as possible.

The length of the interviews varied according to type of institution. On average, the UNI-PRO interviews were longer than the company interviews (both CATI and CAWI). The overall average interview length was 17 minutes.

Table A.1.2

Interview length by interview type

Type of questionnaire	Interview length-- mean (minutes)[1]
UNI-PRO CATI	27
UNI-PRO CAWI	23
Company CATI	19
Company CAWI	15
Overall	17

1 Outliers were disregarded when calculating the average time

The basic sampling over all types contained N=11 307 records for companies, and N=692 for UNI-PROs. Of these, for N=4 185 a contact attempt had been made for companies and for N=650 a contact attempt had been made for UNI-PROs. Of the N=23 613 boost sampling records, a contact attempt had been made for N=1 468 records.

Table A.1.3

Contact attempts by type of organisation and sampling part

Type of organisation		Sampling (N)	Boost sample (N)	Contact attempts sampling (N)	Contact attempts boost sampling (N)
UNI-PRO	European	505	-	463	-
	Japanese + Korean	116	-	116	-
	United States	71	-	71	-
	Total	692	0	650	0
Companies	European	7 191	19 530	3 118	385
	Japanese + Korean	689	-	513	0
	United States	3 427	4 083	554	1 083
	Total	11 307	23 613	4 185	1 468

For many records, initial online research on the UNI-PROs and companies was required before a contact attempt could be made. In some cases, no contact details were given or could be traced.

The most successful method to contact companies differed among geographical regions and even among countries. In the US a telephone call is unlikely to result in contact with a suitable contact person or target person, while an approach by email is much more effective. On the other hand, in Europe and to some extent also in Japan and R. Korea, a telephone call is generally more successful. Thus, a mixed contact method was used for the main regions – the US and Europe, Japan and R. Korea – using CATI and CAWI.

A.1.6 Net sample

The net sample resulted in N=282 complete interviews with UNI-PROs and N=823 complete interviews with companies. A relatively high response rate was achieved for UNI-PROs. In general, the response rate among UNI-PROs was considerably higher than among the companies. However, for UNI-PROs in the US only half of the targeted number of interviews in their strata was achieved. This is because the very limited sample size did not provide enough records to achieve the full target.

For companies, the targeted N were achieved among SMEs and non-SMEs, except for the strata of European SMEs: Eastern and Southern European. The disproportional setting of the strata definition for these SMEs provided a sample size too small to achieve the full targeted net sample in their respective strata. However, half of the targeted interviews were achieved.

Table A.1.4

Net sample (completed interviews)

Type of organisation		Country/Country group	Target (N)	Complete interviews (N)
UNI-PRO		Europe	150	182
		Japanese + Korean	50	73
		US	50	27
		Total	**250**	**282[4]**
Companies	**SME[1]**	European SME: Eastern European[2]	60	32
		European SME: Southern European[3]	60	28
		European SME: Other European	180	192
	non-SME[1]	European non-SME: All	150	313
	SME + non-SME	Japanese + Korean	100	140
		United States	100	118
		Total	**650**	**823[4]**

1 The classification into SME and non-SME was based on specific information on filing power and/or number of employees, if available in the sampling. The classification was not final, therefore, but determined by the likelihood of what group the companies may fall under. The actual classification was eventually identified by the answers given in the survey interview.

2 Countries included: Bulgaria, Czech Republic, Hungary, Estonia, Poland, Latvia, Lithuania, Romania, Slovakia

3 Countries included: Croatia, Cyprus, Greece, Italy, Malta, Slovenia, Spain

4 Due to consolidation of N=9 organisations which answered more than one questionnaire, the final cases resulted in N=278 for UNI-PROs and N=822 for companies.

A.1.7 Data preparation and validation

Once the fieldwork was finished, the captured data were checked for:

— completeness

— conditional logic

— consistency (whether the answers given by a company were consistent, including closer analysis of any outliers or any other non-valuable data, which were removed in some cases)

— plausibility (including closer analysis of any outliers or any other non-valuable data, which were removed in some cases)

Open text answers were examined and categorised, if necessary

A.1.8 Weighting of the final cases

The focus of the analysis was on the defined strata of type of organisation (UNI-PRO, SME, non-SME) and region (Europe, USA, Japan + R. Korea). The single strata cells were supposed to provide a sufficient number of interviews for comparison across the strata cells. This is why no post-stratification was applied to the entire net sample.

The sample units were defined as organisations (UNI-PROs or companies). Each unit was supposed to represent one observation in the net sample. However, during the fieldwork, for nine organisations more than one interview was collected, because several persons within these organisations wanted to participate and provide their information. These interviews were weighted down to result in exactly one observation per organisation. Consequently, the final cases represent the participating organisations, with N=278 cases of UNI-PROs and N=822 cases of companies.

Another part of the analyses consisted of evaluating the number of European patent applications that the participating organisations represent. In order to translate the final cases from observations of units into observations of applications, the organisations were weighted by the number of European patent applications they had filed in the past three years. This information was derived from the answer to survey question QA8 (“How many filings of European patent applications have you and your team you supervised on behalf of your current organisation in the past three years?”), if available, and calculated using the midpoint method. Subsequently, the information on the number of European patent applications was additionally verified and enriched with data from the EPO database for the following three scenarios:

— The survey question information remains undisclosed.

— The survey response shows a number of 100 or more applications (large applicant).

— A discrepancy appears between the stated survey question information and extrapolated EPO data on the number of applications.

The weighting of final cases by European patent applications resulted in N=9 607 applications from UNI-PROs and N=70 645 applications from companies.

Table A.1.5

Applications filed in the past three years represented by final cases (participating institutions)

Type of organisation		Country/Country group	N applications represented by the final cases[4]
UNI-PRO		Europe	6 670
		Japanese + Korean	1 383
		US	1 554
		Total	**9 607**
Companies	**SME**[1]	European SME: Eastern European[2]	120
		European SME: Southern European[3]	166
		European SME: Other European	2 139
	non-SME[1]	European non-SME: All	41 062
	SME + non-SME	Japanese + Korean	14 743
		United States	12 415
		Total	**70 645**

1 The classification into SME and non-SME was based on specific information on filing power and/or number of employees, if available in the sampling. The classification was not final, therefore, but determined by the likelihood of what group the companies may fall under. The actual classification was eventually identified by the answers given in the survey interview.

2 Countries included: Bulgaria, Czech Republic, Hungary, Estonia, Poland, Latvia, Lithuania, Romania, Slovakia

3 Countries included: Croatia, Cyprus, Greece, Italy, Malta, Slovenia, Spain

4 Units weighted by their number of filed applications in the past three years

Annex 2 Spanish Patent and Trademark Office survey on the grace period (2021): report summary

In April 2021, the Spanish Patent and Trademark Office (OEPM) carried out a survey of its stakeholders regarding the grace period. A questionnaire was sent for this purpose to several stakeholder associations.
The stakeholder associations which responded to the survey were: LES (Spain-Portugal); Spanish National Research Council (CSIC); Official Association of IP Agents (COAPI); Association of Spanish Inventors (A. Inventores); CEOE; AIPPI (ES).

In its questionnaire, the OEPM defined the "safety net grace period" along the lines of the definition proposed by the ESAB Statement of 2015: a grace period of 6 months duration calculated from the priority date; with a mandatory declaration requirement; with prior user rights for third parties having made serious and effective preparations to use an invention prior to the priority date and acting in good faith, giving them the right to continue using their invention; and applying only to disclosures of the applicant's invention, and not to independent disclosures made by third parties.

A summary of the responses of the stakeholder associations is provided below:

1. Would a grace period be beneficial for the users you represent? All answered in the affirmative except CEOE and AIPPI (ES). CEOE's no was definite, and it did not reply to the following questions on details. AIPPI (ES) responded that the grace period should be a tool to remedy accidental or abusive disclosures only, not provide opportunities for a systematic strategy for applicants.

2. Could they accept a safety-net grace period as defined above, and if so, whether they preferred a 6- or 12-month duration? Two respondents answered in the affirmative, but preferred a 12-month duration (LES and A. Inventores), CSIC thought 6 months would suffice but 12 would be acceptable to harmonise with other countries; COAPI reported diverging answers, but supported a 6-month duration. AIPPI (ES) was prepared to accept a 6-month safety-net grace period, provided it was calculated from the filing date, and part of a package of harmonisation measures as proposed by the ESAB.

3. Should it be mandatory to file a declaration with the application, specifying the date, place and contents of the pre-filing disclosure? LES, CSIC and A. Inventores supported a declaration requirement as a condition to benefit from the grace period, COAPI reported "various responses" and AIPPI (ES) supported a declaration requirement with additional requirements in line with its response that the grace period should apply only to accidental or abusive disclosures.

4. Should the rights of third parties be protected, and if so, in which cases and according to which conditions? All respondents were in favour of prior user rights. CSIC added the condition that this was provided the use was not based on an accidental disclosure of the applicant's invention. AIPPI (ES) emphasised the importance of prior user rights to prevent an indiscriminate use of the grace period.

5. Should intervening disclosures by third parties form prior art? In which cases and on what conditions? COAPI replied in the positive. AIPPI (ES) supported that disclosures of third parties independent of the applicant form part of the prior art, noting that it was an important element of the safety-net preventing the strategic use of the grace period. LES proposed that intervening third party disclosures should be graced for any subject-matter which was contained in the first disclosure by the applicant and only form part of the prior art for matter not contained therein. [Note: this would be in line with the US grace period.] CSIC responded that under no circumstances should third party intervening disclosures impact on the novelty or the inventive step of the invention of the applicant who was availing himself of the grace period [Note: there appears to be an inconsistency with the association's response to Q.2].

Annex 3 Portugal's Institute of Industrial Property survey on the grace period (2021): report summary

In May 2021, Portugal's Institute of Industrial Property (INPI) carried out a survey of its stakeholders regarding the grace period, in order to inform its position regarding harmonisation efforts within the Group B+. The survey was open for almost a month, and INPI produced two reports, one focusing on the responses given by Official Industrial Property Agents (AOPI), the other focusing on those given by Offices for the Promotion of Industrial Property (GAPI).

A total of 113 people responded to the questionnaire. The breakdown of responses to the questionnaire included 69% of responses from SMEs, 8.8% from AOPI, solicitors or IP consultants, 12.4% from individuals, 5.4% from other entities and, finally, 4.4% of responses emanated from Offices for the Promotion of Industrial Property (GAPI).

To the question "Do you think that having a grace period would benefit your organisation?" 45.1% of respondents overall replied positively, with 12.4% answering no, while 41.6% did not know, or opted for a neutral answer.

A total of 60.2% of respondents to the questionnaire favoured an internationally harmonised grace period, 9.7% did not, and 30.1% did not respond or had no opinion on the matter.

Overall, 59.3% of the respondents to the questionnaire considered that if there was a grace period, a "safety net" type would be appropriate; 1.8% of the participants disagreed; 37.2% either did not know or preferred not to respond. Others (0.9%) considered that it should exist, but with a shorter duration (2 -3 months) and another 0.9% agreed, considering however that "the costs should be covered/supported".

Input from AOPIs

Of the 8.8% of AOPI respondents, 20% considered having an "intermediate" level of knowledge in patent law, while 80% considered themselves "advanced". The majority (80%) of the AOPI respondents in this questionnaire were in favour of the adoption of an internationally harmonised grace period. The main grounds given were: greater transparency and equality; greater legal certainty for the actors; possibility of procedural simplification.

Of the AOPI respondents, 60% believed that the grace period would bring advantages to the organisations they represent, while 20% believed it would not, with another 20% either not responding or stating that they did not know.

Regarding the disadvantages of a grace period, the AOPI respondents stated that "99.9% of Portuguese companies do not hold patents and would be more uncertain in understanding what is the state of the art not protected by a patent" and also that "the grace period introduces a new factor of uncertainty for third parties when faced with a disclosure (...). While it was currently clear that disclosures by the applicant can only take place after the filing date of the patent application, in practice the grace period would increase by 18 to 24 months the possible "black box" [where it was unknown whether an application was pending], thus delaying the decisions of third parties for another 6 months, for the benefit of those who should have ensured the non-disclosure of the invention (...). Worse, the practical effect of the grace period is to increase by six months the duration of protection of a patent".

The questionnaire mentioned that a proposal regarding the grace period currently being discussed was that of a "safety net" defined as follows: a grace period of 6 months, calculated from the priority date; covering disclosures made by the applicant/inventor and not to those of independent third-parties; with a mandatory declaration (with indications of how, when and what information on the invention was disclosed); with prior use rights capable of arising until the filing/priority date.

100% of the AOPI considered that if there were to be a grace period, a "safety net" type would be appropriate. Regarding the scope of a "safety net" grace period, 80% of the AOPI respondents considered that it should cover all disclosures, while 20% considered it appropriate to limit the application of the grace period to specific types of disclosure, such as disclosures of a scientific nature.

Input from GAPI

As mentioned, 4.4% of responses emanated from Offices for the Promotion of Industrial Property (GAPI), a low response rate.

Of all the GAPI respondents, 40% considered having an "intermediate" level of knowledge in patent law, while 60% defined their knowledge in the area as "advanced". All (100%) GAPI respondents to the questionnaire favoured the existence of an internationally harmonised grace period, giving the following arguments as their main grounds:

— possibility of having more comprehensive patents, increasing their importance

— avoiding the risk of unintentional disclosure

— promoting legal security, internationalisation and equity

All GAPI respondents agreed that the grace period would bring advantages to the organisations they represented (100%). None believed that the existence of a grace period would bring disadvantages.

As was the case with AOPI respondents, 100% of GAPI respondents considered that if there was a grace period, a "safety net" type would be appropriate. Regarding the scope of the "safety net" grace period, 80% of the GAPI participants in this questionnaire considered that all disclosures of the applicant/inventor should be covered, while 20% considered it appropriate to limit the grace period to specific types of disclosures, such as those of a scientific nature.

A GAPI respondent pointed out in the comments that "the "safety net" grace period should include all disclosures since the limitation to certain types of disclosures can translate into greater legal uncertainty and complexity of the processes".

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