

Fostering innovation and growth in the digital age: the case for challenge prizes in Europe

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Executive Summary

- > The use of challenge prizes has been a success in the United States, and has increasingly also had positive results in the United Kingdom and Sweden.
- > As an emerging tool, prizes have a strong potential of supporting the 'Europe 2020' goals and to bolster the growth of the Digital Single Market. To realize their potential, future national and EU prizes could be made more effective by improving communication and outreach about them as well as conducting systematic impact assessments.
- > Two policy recommendations in particular would set the stage for a strong European prize sector:
 - The creation of a European Fund for Challenge Prizes would allow for more stakeholders to use the instrument whilst building capacity.
 - Establishing a European Challenge Prize Platform would result in a cheap and accessible means of listing public, private, and third-sector prizes.

Innovation has become a trademark of theories on economic growth in the 21st century. With entrepreneurship at its heart, it is seen as a key driver of wealth creation. By designing new products and services, business models, and by improving efficiencies, innovation can provide societies with the foundation for continued competitive advantages. In the pursuit of innovation, public and private actors are experimenting with new forms of policy instruments, which are more readily available with the advent of modern telecommunications and platform tools. Identifying best practices that fit specific contexts has become a key objective for businesses and policy-makers.

In this context, the European Union's '2020 Strategy' calls for the creation of the conditions for smart, sustainable and inclusive growth. Innovation is very much at the forefront of this strategy and includes bolstering public spending on research and development, as well as developing Europe's emerging Digital Single Market. Importantly, 'Europe 2020' considers SMEs (Small- & Medium-sized Enterprises) as the growth and job creators of Europe, given that they represent 99 percent of all companies in Europe, and have created 85 percent of all new jobs in the last five years (European Commission 2016). Within Europe's increasingly digitalised economy, supporting SMEs in their innovative endeavours is seen as imperative to ensure continued growth and to enable them to compete globally.

Challenge prizes, that is, competitions used to drive innovation and foster solutions to specific challenges, have an important potential when it comes to contributing to these European goals. Not only do they foster innovation, they also connect organisations, talent, and investments. This policy brief provides an international comparison of challenge prizes, highlights the benefits of using such prizes, and discusses their European status before indicating ideas for further improvements.

What are challenge prizes?

In broad terms, a challenge prize (also known as an incentive competition or inducement prize) is a competition organised when facing a problem that needs to be solved. The host of the prize – a public authority, private company, third-sector actor or a philanthropist – outlines the problem and sets specific criteria for evaluating a possible solution. Based on this, problem-solvers will be able to understand the challenge and come up with their own approach to solving it. The host promises a prize (commonly monetary) and establishes a timeline by which solutions are due. The external problem-

solver – an individual, team or organisation – who provides the most successful solution, wins the prize. Beyond this, challenge prizes are highly malleable. They can have multiple stages, incorporate funding or support for the external problem-solvers, and include public interaction (for instance, public voting on the winner).

Prizes work on the basis of opening the innovation process by actively encouraging outside actors to participate in solving a particular problem. In some cases, solutions can come from those who are closer to the problem than the organisation hosting the prize – be they consumers or entrepreneurs. This can help overcome the ‘stick-information problem’, in which organisations have difficulties to understand issues experienced by their users. In other cases, knowledge from a completely different industry can be used in a novel way in the area that a prize is addressing – facilitating innovation and inter-industrial knowledge transfers. Problem-solvers often also mobilise their own capital and end up generating unique approaches to solving a problem, thereby contributing to a financial leverage in terms of research and development spending. Prizes also stand out from other instruments in that they usually only pay for results. If there is no viable solution, a prize is not awarded. In cases where there are several viable solutions, the best one wins.

Brief history of challenge prizes

Challenge prizes are not necessarily new, they have been used for centuries and for a variety of purposes. Notable examples include the ‘Longitude rewards’ set up in 1714 by the British government to find a simple way to determine a ship’s longitude at sea, and the ‘Orteig Prize’ prompted Charles Lindbergh to make the first non-stop flight between New York and Paris in 1927. Many historic prizes have played a significant role in advancing their fields and driving innovation.

The modern story of challenge prizes, however, begins in 1995 with the establishment of the XPrize Foundation and the launch of its first prize, the ‘Ansari X Prize’ in 1996 to support the development of low-cost spaceflight. Since then, XPrize has set up partnerships with the likes of Google and NASA to establish more prizes in a number of fields. Other companies such as InnoCentive have used crowdsourcing as a way to offer creative solutions to clients, including pharmaceutical, food and beverage, and security companies.

In terms of public sector action, then President Obama announced in 2009 the ‘Race to the Top’ competition, which rewarded state governments in the United States

(US) that achieved educational policy objectives. The Obama administration also launched Challenge.Gov, an online platform listing challenge prizes across the federal government, public agencies, and state governments. Since 2010, and continuing under the Trump administration, it has hosted more than 800 prizes on behalf of over 100 agencies – engaging with more than a quarter of a million problem-solvers and awarding over \$250 million in prize money.

In Europe, the United Kingdom (UK) and Sweden have become the leaders in using challenge prizes, with both the public and the private sector becoming involved, whereas in other European countries, prizes are less common. In the UK, Richard Branson launched the ‘Virgin Earth Challenge’ in 2007, a prize to find ways to remove greenhouse gases from the atmosphere. Meanwhile, NESTA, the UK’s premier innovation foundation, has since 2008 regularly hosted prizes whilst supporting national and local governments in building capacity for creating and overseeing prizes. In the case of Sweden, the Swedish Post and Telecom Authority has held a series of 14 prizes since 2010. Vinnova, Sweden’s government agency for research and development, has also supported research on prizes and sponsored companies in hosting their own prizes. Since 2009, Sqore, a private company, has provided services to public and private actors alike in hosting prizes.

In the European Union, prizes have started seeing usage with the current Multiannual Financial Framework (2014-2020), and especially under Horizon 2020, the EU’s programme for research and innovation. The European Commission has organised 15 ‘Horizon Prizes’ so far (European Commission 2017). These prizes have been open to any legal entity (including natural persons) established in an EU member state or country associated to Horizon 2020, and have addressed important issues relating to clean air, elderly mobility, and personal authentication, to name a few.

The potential benefits of challenge prizes

Depending whose perspective one considers, challenge prizes can confer a number of benefits. For the hosts, they can:

- Generate new ideas and solutions by attracting external problem-solvers;
- Identify talent and investment opportunities, opening the possibility of hiring or working with problem-solvers;
- Offer a cheaper alternative to in-house research and development. Some prizes have seen a return on investment of 10 to 50 times the prize sum;

- Provide market leadership by spearheading market disruptions and mitigating long-term risks of complacency, and by guiding efforts against current challenges;
- Be a means of standing out in today's digital age and conveying an organisation's values and mission;
- Diversify the innovation tools at one's disposal;
- Inspire people to dream about tomorrow and encourage transformative thinking and changes.

For problem-solvers, prizes can:

- Create a market for their products and services, rewarding solutions and allowing for further development of new ideas and solutions;
- Allow for ties with possible investors (for instance, venture capitalists, angel investors, or conventional firms);
- Provide an opportunity to develop and demonstrate skills, as well as gain credibility and recognition within a certain industry.

The future role of prizes in Europe

Comparative research on challenge prizes involving Sweden, the UK, the US and the EU shows that prizes are adaptable and work to complement the institutions of different types of market economies (for an overview, see Table 1 below).

For instance, in Sweden, a coordinated market economy, with its many non-market forms of interaction across a wide range of economic actors, prizes have been highly adaptable – varying in scale and ambition depending on the prize area. As a result, prizes as an instrument have been very inclusive, involving students, start-ups and larger firms. Swedish public authorities also use prizes to foster social innovation and support trends in digitalisation and smart industrialisation – involving the public, private, and academic sectors. Prizes have also been used to strengthen inter-firm relationships and to facilitate the sharing of technical know-how.

In the case of the UK, a liberal market economy, a number of prizes have been utilised to create demand for solutions where little existed before. This in a sense has created market mechanisms for social goods. It has in another way extended the potential reach of said mechanisms by encouraging non-conventional actors to participate in innovation activities (such as NGOs or local communities).

With the EU being composed of member states falling into a spectrum of liberal to coordinated market economies, challenge prizes could leverage Europe's diversity and the many national specificities and needs.

Best practices are not concentrated in a select few locations, they exist throughout Europe. Different political economies give rise to multiple approaches to industrial and social challenges, many of which have the potential for being transferred or modified to successfully fit other contexts. At the same time, access to investments is not evenly spread for many of Europe's high-potential start- and scale-ups. Simultaneously, young talent can find it difficult to use their skills if their particular sector is not well-established in their region or country.

Prizes have the potential to help address these issues. By highlighting high-potential products and services, they can unlock much-needed pan-European investments. They can also support the development of emerging sectors by creating international business ties and foster European mobility for young talent. But most importantly, they can diffuse best practices and innovative solutions to common challenges faced on numerous levels. Across Europe, companies, cities, and even countries face similar challenges – prizes can showcase Europe's best solutions.

Beyond the general encouragement of a greater use of such prizes, there is room for improvement regarding how stakeholders, including the EU, currently use them. Often, they still lack effective impact assessments tools. If prizes are to be compared to other policy instruments, their true impact and comparative costs and benefits need to be better understood. This is a problem for public and private prizes alike. Only by holding prizes to the same standards as other tools can their potential be fully realised. More analysis on post-prize impacts are needed.

Another area of improvement concerns communication. There is a tendency of weak engagement with prizes due to a lack of awareness. Many successful prize hosts see roughly 50 percent of costs going into marketing and outreach. This is an area where national public authorities and the EU could improve – given that more participants in a prize competition imply a higher potential leverage. More tailor-made partnerships with relevant industry actors on outreach during the inception, development, and launch of a prize can support early awareness.

Policy recommendations

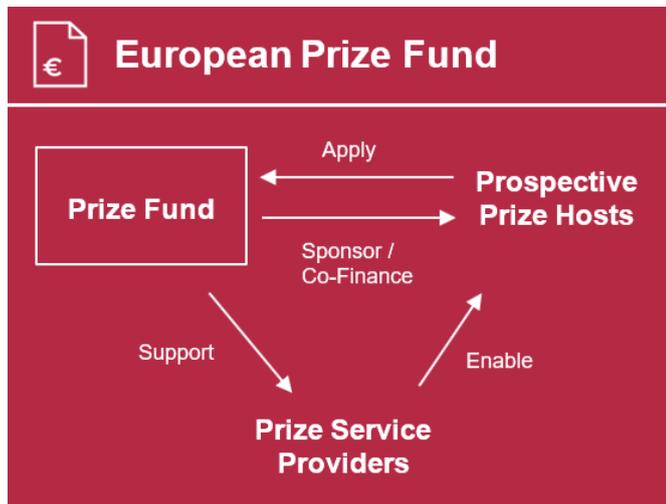
There are a number of ways in which to foster greater usage and improve the effectiveness of prizes in Europe.

A European Fund for Prizes

Given the relatively under-utilised nature of challenge prizes in Europe, the instrument could come across as experimental to prospective prize hosts. For others, the expertise or awareness of the instrument might simply not

exist because there is no local experience of using prizes. With this in mind, the prize sector could use stimulation. Creating a European Prize Fund could be one possible way of boosting the growing prize sector and spreading this instrument to more European countries and users. In Sweden, for instance, the innovation agency Vinnova has successfully supported dozens of small-scale prizes hosted by SMEs, which has led to increased innovative activity with many of the above-mentioned benefits.

A European Fund could do the same. For instance, a fund could work like conventional EU calls for proposals, in that prospective prize hosts submit applications to the fund where they could gain sponsorship or co-financing for their prizes. At the same time, the fund could be used to support organisations from the private or third sector wishing to develop prize hosting capacity in areas where limited capacity exists, thereby supporting a growing ecosystem for this instrument.



'Challenge.EU' – A European Challenge Prize Platform

The lack of awareness of prizes inherently limit their potential leverage and impact. Communicating them can be a costly and time-consuming endeavour for which many lack the resources. By creating an online platform for European public, private, and third sector actors to host prizes in the same spirit as the American Challenge.Gov, many of these challenges could be addressed.

A platform could serve as a general directory for prizes hosted on pan-European, national, regional, local, or industrial levels, connecting problems with external solvers who might not otherwise interact.

Whilst many prize hosts will want to set up their own websites and tailor their outreach campaigns to fit their prizes, merely listing it on a platform can, through aggregation, raise visibility at no cost. It is also possible to

use a platform to secure funding or investments for a potential prize. Investors could either be attracted by promising them a stake in the prize outcome or they could participate based on purely philanthropic motivations. Lastly, by listing available challenge prize service providers, prospective organisations can enlist the expertise to run and host an effective prize.

Altogether such a platform could leverage Europe's growing digital single market by connecting organisations, problem-solvers, and investments across the continent whilst addressing social and industrial challenges.



Conclusion

With numerous success stories in the US, and a growing number in Sweden and the UK, challenge prizes stand to support the EU's goals and align with the development of the Digital Single Market whilst also facilitating skills development, deeper inter-industrial ties, and pan-European investment opportunities. To fully realize their potential, however, there is a need to raise awareness and support for them as a tool, build capacity, as well as provide the platforms to connect possible prize hosts and problem-solvers.

While challenge prizes are not the be-all and end-all of innovation tools, they are certainly promising instruments given their ability of being used effectively across different market systems, at varying scales, and by involving a wide range of actors (some of whom fall outside conventional innovation activities). These things considered, prizes would serve to complement other existing measures – adding new options to support European innovation in the digital age. With this in mind, they warrant further support and exploration.

Table 1: International Comparison of Challenge Prizes

	United Kingdom Liberal Market Economy	Sweden Coordinated Market Economy	United States Liberal Market Economy	European Union *N/A*
Broad national innovation objectives	<ul style="list-style-type: none"> - Cross-sectorial cooperation - Openness in innovation - Research commercialisation 	<ul style="list-style-type: none"> - Digitalisation - Open Innovation - Smart Industry - Triple Helix cooperation 	<ul style="list-style-type: none"> - No clearly defined innovation strategy since new administration 	<ul style="list-style-type: none"> - Europe 2020
Challenge prize areas	<ul style="list-style-type: none"> - Often socially oriented but with technical requirements 	<ul style="list-style-type: none"> - Both socially and technically oriented prizes. 	<ul style="list-style-type: none"> - Both socially and technically oriented prizes 	<ul style="list-style-type: none"> - Covers several areas but focus on technical aspects
Estimated number of prizes	<ul style="list-style-type: none"> - Medium (> 70) 	<ul style="list-style-type: none"> - High (> 300) 	<ul style="list-style-type: none"> - Very High (> 1000) 	<ul style="list-style-type: none"> - Low (15)
Prize hosts and platforms	<ul style="list-style-type: none"> - Voluntary sector (NESTA) - Public authorities - Limited number of private firms - Philanthropists 	<ul style="list-style-type: none"> - Public authorities via public-private & triple helix constellations - Private firms - Philanthropists - Private service providers (Sqore) 	<ul style="list-style-type: none"> - Public authorities (Challenge.Gov) - Private firms - Philanthropists - XPrize - Private platforms (InnoCentive, HeroX, etc.) 	<ul style="list-style-type: none"> - Largely limited to the European Commission

Source: Author's compilation

Further Reading

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Alexander Mäkelä is a Junior Research Associate at the Impact Assessment Institute, and a recent graduate of the College of Europe where he studied European Public Policy Analysis. He also has worked at the European Commission in the Unit for Job Creation at DG Employment, Social Affairs and Inclusion, where he researched the 'future of work' and analysed European labour markets.

He has previously researched and published work within areas of innovation, small- and medium-sized enterprises, and digitalisation. This includes being a finalist in the McKinsey Global Institute's 'An Opportunity for Europe' Essay Prize, and the winner of ETNO's prize for best thesis in tech, digital, and telecommunication policies.

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