

Public Funding Approaches to Video Game Industry Development in EU Member States

Nikola Vlahović, Jasmina Pivar, Ivan Celić

Faculty of Economics and Business

University of Zagreb

Trg J. F. Kennedyja 6, Zagreb

{nvlahovic, jpivar, icelic1}@net.efzg.hr

Abstract. *The video game industry, with its proven resilience and flexibility, plays a crucial role in mitigating economic shocks in customer and resource markets, as well as overall economic recessions. This unique characteristic has led many countries to allocate public funding to this industry, recognising its potential to bolster national economies during times of crisis. The varying success of different public funding approaches in these countries underscores the industry's economic significance.*

The goal of the paper is to analyse public funding approaches that have provided successful support for the development of gaming industry over several EU member states and draw the conclusions in what are the best approaches for particular instances.

Keywords. Video game industry, public funding, European Union

1 Introduction

One of the most important endeavours of any economic policy is to maintain economic stability both in times of growth and especially in times of recession. Usually, as economic activity wanes, most industries follow due to their complex interrelationships and interdependencies. Several special cases may resist the trends, which can sometimes cushion the undesirable trends as they appear, such as in the case of an economic crisis. Over several previous economic crises and recessions, the gaming industry has drawn the attention of policymakers across various markets as an industry with exactly these strengths. Many countries have perceived these characteristics of the gaming industry as a useful strategy for bridging various economic strifes.

This paper will delve into the approaches of selected European Union member countries that have recognised the gaming industry's potential and implemented various funding mechanisms. These approaches aim to foster a stable and sustainable video game industry, which not only contributes to economic

growth during periods of expansion but also serves as a buffer during economic crises, offering a promising outlook for the industry's future.

The goal of the paper is to detect mechanisms that are reliant directly or indirectly on public funds that policy makers have at their disposal and that have been most effective in particular socio-economic situations.

To detect and identify the relevant approaches, an overview of the German, French, Finnish, Croatian, and Polish video game industries, as well as the growth and development of the video game industry, will be considered.

The rest of the paper is structured as follows: Section 2 will briefly overview the video game industry and its particular properties that may explain its flexibility and resilience to disruptions in economic activities. Next, we will describe several distinct cases of countries that have recognised the potential of video game industry development and introduced support through public funds to encourage the establishment of a healthy and prosperous video game industry. Section 4 will discuss the data presented in previous Sections, underlining the most effective approaches. Finally, in Section 5, we will provide conclusions and outline the most important directions for further research of the presented topics.

2 Overview of the Video Game Industry

The video game industry is one of the most prominent industries in the knowledge-based economy and a paragon example of a quaternary sector of the contemporary economy (Zackariasson & Wilson, 2012). It is positioned as the meeting place of a number of creative and knowledge-intensive industries that have been enabled by digitalisation and digital revolution from the late 1990s to the early 2010s (Lyonnet & Rabineau, 2023).

The industry's scope couples various technological aspects with creative and cultural aspects, as well as business strategies, models, and solutions. In synergy,

these elements create practical software products and services that compete in the global market either as entertainment titles, educational tools, training aids (Schobel et al., 2021), or eSports as competitive outlets (Block & Haack, 2020).

From its early beginnings, the gaming industry has influenced the advancement of various technologies and information and communication technologies specifically. Hardware, video processing, human-computer interaction, computer networks, multimedia, streaming, artificial intelligence (Ishwarya et al., 2017), and software agents are just a few of these technologies. It has also enriched the opportunities for artistic talents in graphic design, storytelling and writing authors, various dramatic art talents, etc.

The early niche gaming industry started with the development of physical products in the form of arcades and the first game consoles (Palma-Ruiz et al., 2022). Following the increased availability of computers for personal use, the gaming industry was able to explore new business opportunities and create digital products in the form of game titles. This, in turn, initiated an exponential rise in the development of engaging mechanics and genres of games we have today. An additional boost to the development of the gaming industry was the invention and commercialisation of the Internet. It enabled one of the first genuinely fully digitalised life cycles of digital products (i.e. games), including both development, distribution and consumption, gaining increasing market share through this process.

As of 2018, there are 2 billion 341 million active video game players worldwide (Baltezarevic, 2018) with increasing trends additionally fuelled by the recent COVID-19 pandemic (Block & Haack, 2020). The global video game market is expected to reach US\$282.30 billion in 2024, with average annual growth rate of 8,76% until 2027. The projected annual user penetration rate in the same period is between 15% to 18% (Alda et al., 2024).

Many countries and international professional organisations have acknowledged various disciplines through annual award distinctions, both by economic parameters and artistic value, to promote and encourage the development of games with additional value for players.

As we mentioned earlier, one of the most interesting properties is that the video game industry is a knowledge-based digital industry. This means that the main resources for the development of various software solutions are creative artists and proactive engineers and programmers proposing novel and ingenious solutions that are pushing the limits of currently available technologies (Politowski et al., 2021). Under appropriate socio-economic conditions, these experts can emerge in various countries, connect through globalised digital infrastructure, and access global markets without limitations of geographical locations. This is one of the main factors that enable the video gaming industry to be resilient to economic

cycles and have an overall stabilising effect. This is even more pronounced in times of economic crises.

Any national economy can invest in creating the appropriate environment that can form a solid basis for such a knowledge-based industry on the same terms as any other country. The effect this may provide for the overall national economy may differ depending on the size, characteristics, structure and maturity of existing industries in each country. This is why, during the digital transition of national economies, a number of countries pioneered new approaches and strategies for establishing national gaming industry as the core of their entertainment industry. For this purpose, they employ various mechanisms, such as subsidies, grants, tax exemptions, etc. These measures achieve their goals in varying success rates depending on the circumstances of the national economy.

In the next Section, we will present the German, French, Finnish, Croatian and Polish video game industries and funding approaches to creating a positive entrepreneurial climate, with the goal of establishing a solid basis for the development of their respective gaming industries.

3 Overview of several selected EU countries

This chapter describes the German, French, Finnish, Croatian and Polish video game industries and related public funding to detect and identify the most relevant approaches to the video game industry.

Germany

Germany's game industry market is the largest in Europe. According to Germany Trade & Invest (2021) around 750 companies publish and/or develop video games. Furthermore, around 60% of the German population plays video games, so its market provides opportunities for international investors in segments such as online games and in-app purchases. Since the number of smartphone devices grows constantly, there has also been a steady increase in mobile device gamers. In 2020, regarding games market revenue, in-app purchases were a leading business model. Gamers doubled the demand for online services for PC, console, and smartphone games. German gaming industry employs more than 10 thousand people. These people are trained at 109 public educational facilities offering game development programs (or 1,3 facilities per 1 M citizens).

Developer and publisher gaming in Germany is growing around major cities, with the Rhine-Ruhr region, Berlin, and Munich being the most important German gaming clusters. All these clusters have local success stories and the presence of prominent international gaming companies and gaming education and training institutions.

Start-ups also recognise the country as a preferred location for launching video game studios. This is due to moderate costs, supporting infrastructure, and access to talent. Germany is a focal point for the European and international gaming business communities.

Video game studios use the Creative Europe programme by the European Commission, particularly the Support for the Development of European Video Games subprogram. However, Germany supports the industry with the Federal German Games Funding Programme and 50 million euros annually for video game developers active in the country. The aim is to reinforce the country's position as a global hub for game development and enhance its international visibility. Funding is provided as a grant to prototype and development projects. Prototype development costs must be between 30 and 400 thousand euros, while production development costs must be at least 100 thousand euros. Around 190 projects are part of the initiative, with over 100 projects already completed (Federal Ministry for Economic Affairs and Climate Action, 2022). This complements two other supporting instruments for the computer and video games industry, the German Video Game Awards and the Federal German Games Funding Programme, launched in 2019.

Moreover, it is essential to state that federal states fund the video gaming industry. Funding approaches vary according to the individual funding organisation. Funding is usually available to developers and local, federal, and state project activities.

Germany offers cultural, R&D, and SME launching aids for the video game industry. It also provides start-up support and infrastructure for games development and hubs, with incubation and accelerator programmes. Germany offers various funding incentives, R&D grants, loans and tax credits, interest-reduced loans, and equity financing for launching a new game development studio, and access to regional funding and guarantees. The total amount of gaming funding exceeds 80 million euros annually.

France

France is a leader among Member States. It has excellent educational institutions and a strong system of public funding that supports the video game industry. Since the 1980s, France has been the cradle of the European video game industry, with Ubisoft and Infogrames being the most important studios. It is part of the France-Germany-Poland axis, which employs most talent in video game development. Paris Region has the highest number of video game companies in France. Some clusters and incubators supporting the video game industry's growth, such as Capital Games, Cap Digital, C-19, and Ubisoft Entrepreneurs Lab, are also placed in the Paris Region. Furthermore, the Paris Region offers support incentives for the creation of video games.

According to Syndicat National du Jeu Video (2023) in 2022, the French video game industry comprised more than 1 thousand companies. The French regions with the largest number of video game companies are Ile-de-France and Auvergne-Rhone-Alpes. Game development studios mainly develop indie and AA types of video games. Regarding business models, the most popular are paid upon purchase with no additional content and paid upon purchase with additional content. Most developed games are distributed on PC, Steam, Epic, and alternative PC stores. Self-financing and video game tax credits are French video game studios' most popular financing mechanisms. Grants via the European Creative Media programme are the least popular. Regarding the popularity and attractiveness of France for the video game industry, 85% of companies consider France an attractive territory in 2022. The most important attractiveness factors are tax incentives and the quality of training provided by 130 educational institutions.

Regarding tax incentives, France has an efficient tax credit with almost 70 million euros in annual funding. Tax credits are available as part of cultural state aid for video game production and R&D aid supported by the French National Centre of Cinema. Its Fond d'Aide a la Creation de Jeu Video is in advance funding for video game projects. With a 30% tax credit for production expenditure, the French Video Games Tax Credit (CIJV) is one of the most competitive countries for the video game industry. It has supported around 400 projects since 2008. Applied projects must pass the cultural test to be eligible. Moreover, the Video Games Support Fund includes a Fund for Original Creation, Prototype Production, and Collective Actions Fund. The Centre also provides grants for video game pre-production and R&D. Many other tax provisions and public funding approaches are used to support the industry, such as an innovation tax credit of 20%, an R&D tax credit of 30%, grants, R&D loans, loans and equity funding for small and medium enterprises, equity funding for SMEs, and Young Innovative Company status.

Finland

Rovio's and Supercell's success started the growth of the Finnish game industry in 2012. According to Hiltunen et al. (2023), by turnover, the Finnish video game industry is among Europe's top five largest national game industries. It surpassed 3,000 million euros of turnover in 2021. By the end of 2022, there were more than 230 active game development studios and employed 4100 people. It is a European leader in mobile game development, which is the primary driver of the industry's growth. Finland also leads in the number of facilities offering game development programmes by having 6,7 educational facilities per 1M citizens. With almost half of active Finnish game studios, Finland's most significant game industry hub

is the capital region, which consists of Helsinki, Espoo, and Vantaa. Interestingly, mobile is no longer as important platform as it used to be since PC is now nearly as popular as mobile.

The industry's success in Finland is built on a supportive ecosystem. Finnish public funding for the game industry is R&D-oriented, offering grants and loans to studios. However, nowadays, the range of support extends to the industry, such as technology development and marketing. Cultural funding approaches that are common in many other European countries are scarce. Grants are generally available but are dedicated to more than just game development studios. An exception to this is DigiDemo funding. Regarding public R&D funding, Business Finland is the leading funding source for Finnish studios. It has supported the Finnish video game industry through various approaches. Business Finland funding is dedicated to companies registered in Finland. It comes in the form of a grant or a loan. There is also Talent funding that can be used to create new jobs and practices that support the ability to recruit international talent. Furthermore, the financing company Finnvera supports the industry with guarantees and loans. Moreover, DigiDemo by AVEK and the Ministry of Education and Culture supports the development of new digital content, including video games. Therefore, the most important funding sources for the Finnish video game industry include Business Finland, DigiDemo and EU funding.

Croatia

The Croatian video game industry is growing, with 65 game developer studios and 326 employees as of the end of 2022. Seven educational institutions offer game development programs.

An example of a government incentive for the development of the Croatian video game industry is the project Game Industry Center in Novska led by the Regional Coordinator of the Sisak-Moslavina County, with partners Sisak-Moslavina County, Development Agency SIMORA and the City of Novska (Central Finance and Contracting Agency, 2024). The agreement is related to releasing 26.3 m euros from the EU's Just Transition Fund for a Game Industry Center. The Game Industry Center will include an incubator with a hall for testing video games, a gaming campus, a five-year higher education programme and a high school programme. The City of Novska has been profiled as a centre for the Croatian gaming industry.

In 2023, funding for the video game industry was significantly increased through the National Plan for Recovery and Resilience, which had a budget of 33.2 m EUR for cultural and creative industries, including the video game industry. Furthermore, game developer studios in Croatia can receive grants from the Croatian Audiovisual Centres as part of cultural state aid for video game production. Croatian public gaming industry funding is also R&D oriented, offering studios

grants, loans, and equity funding. Moreover, the Ministry of Culture - Entrepreneurship in Culture provides aid in the form of grants for launching a new studio. Equity funding is also available for a new studio.

Poland

In 2023, the Polish video Game industry had around 500 game producers and publishers and a workforce of more than 15,000 people, more than the German video game industry. It is important to state that due to the Russo-Ukrainian War, the video game industry in Poland is experiencing an influx of talent from Ukraine. According to Marszalkowski et al. (2023) the Polish video game industry's success is due to studios' significant efforts in exporting their titles and translating them into more than two languages. Exports account for 96% of Polish gaming revenues. Poland offers 65 game-related degree courses at 52 universities. The Witcher franchise is the most famous Polish video game franchise, released in 2007. Inspired by Central Europe's legends and myths, the Witcher is an excellent example of how the video game industry can help promote the European cultural identity, history, and heritage of different countries.

Some supporting institutions for the Polish game industry are The Polish Games Association and The Indie Games Poland Foundation. The government supports the industry via The Polish Investment and Trade Agency. It supports establishing business relations between entrepreneurs and enables companies to reach their full potential in exporting their products and services. It also supports potential investors in Poland by providing information on legal aspects, tax and available financial incentives. The Polish Investment Zone operated by the Kraków Technology Park should also be mentioned in relation to public funding approaches in Poland. It is a form of support for businesses planning new investments. Companies investing in PIZ are eligible for 12 and 15-year tax relief packages for investments.

Moreover, Polish Ministerstwo Kultury i Dziedzictwa Narodowego offers grants, loans, and tax relief incentives as cultural aid for the video game industry. Game developer studios can use funding for R&D activities through grants, loans, tax credits, and equity funding. Grants, loans, tax credits, and equity funding are also available to aid in launching new game development studios.

4 Discussion

Tables 1 and 2 clearly and structuredly present the video game industry in Germany, France, Finland, Croatia, and Poland. The first table summarises the industry's economic data, while the second outlines the available approaches to public funding of the video game industry in these countries. Table 1 contains data

on 2021 and 2020 since, for the later years, there are not yet available data on all of the selected countries.

Table 1. Video Gaming Industry Economic Data for Germany, France, Finland, Croatia and Poland in 2021 and 2020

Video game industry	DE	FR	FI	HR	PL
Turnover (mil. eur) 2021	3740	3880	3200	64,4	1191
Turnover (mil. eur) 2020	3600	2860	2400	79,3	1335
No. of video game dev studios 2021	717	1147	215	65	439
No. of video game dev studios 2020	591	780	200	45	424
Size of workforce 2021 (in k)	10,9	18	3,55	n/a	12,11
Size of workforce 2020 (in k)	10,07	15	3,35	0,33	9,71
No. of edu facilities	107	130	42	7	52

Table 2. Available Public Funding for the Video Game Industry in Germany, France, Finland, Croatia and Poland

Type of Public Funding for Game Dev. Industry	DE	FR	FI	HR	PL
Cultural	Grants	+	+	+	+
	Loans		+		+
	Tax credits		+		+
	Equity funding		+		
R&D	Grants	+	+	+	+
	Loans	+	+	+	+
	Tax credits	+	+		+
	Equity funding		+		+
SME Launching	Grants	+	+	+	+
	Loans	+	+		+
	Tax credits		+		+
	Equity funding	+	+		+

Table 2 aligns with the conclusions of the European Game Developers Federation's report (2023) about the video game industry's public funding approaches.

Public authorities need to be made aware of the video game industry, which is why there are few parliamentary activities within European bodies. For the development and visibility of the gaming industry in the European Union's member states, proactive public funding approaches to support companies, promoting collaboration between EU countries, and creating a framework that will prevent talent from leaving the European Union are essential.

Public support schemes for video game development at the European Union level exist. Examples include the Horizon Europe research programme and the Creative Europe Programme MEDIA chapter. However, making these incentives visible is still necessary because resources are not used at a sufficient level. Different bodies are working with European and national institutions on behalf of video game industry stakeholders. An example is the European Games Developer Federation, which represents more than 2500 game development studios. Video game unions promote industry and act as representatives in Germany, France, and Finland, such as GAME in Germany, SNJV in France, and Neogames in Finland. Furthermore, regional associations such as French Capital Games and Push Start and Game Only help to structure the local video game industry.

Significant disparities exist between countries regarding public funding approaches to the video game industry. However, it can be noticed that the video game industry is susceptible to the effects of tax credits. Therefore, Member States should consider that when designing their policies regarding developing the video game industry. Also, reliable and easy-to-anticipate schemes need to be developed which are not complex and do not require considerable administrative effort. Additionally, countries should introduce priority grants to finance the work of various stakeholders and partners to open up the sector to partnerships.

Therefore, we recommend the following. Governments of Member States must know the video game industry and its value. Frameworks conducive to the industry's development should be developed. The video game industry should also be used to construct a solid European and state identity. Specialised networks such as French SNJV can disseminate good practices and present efficient public funding approaches. National funds should be available, especially public R&D and cultural financing.

5 Conclusions

In this paper, we presented the results of a comparative analysis of different funding approaches for supporting the development of the gaming industry by

selected member states of the European Union. As previous research and statistics testify, the contemporary gaming industry is highly resilient to economic shocks, which makes it valuable asset in the structure of the national economy as a buffer in the face of economic instabilities. To support the development of this industry, various countries have opted for different approaches to create and maintain favourable business environments for gaming entrepreneurs, developers, publishers and providers of related services and dependant industries.

The paper's goal was to investigate and analyse funding approaches used to support the development of video gaming industries in several European Union countries, such as Germany, France, Finland, Croatia, and Poland.

We have shown that the selection of the publicly funded measure is highly dependent on the current state, strengths, and maturity of the national economy, the strategic positioning of the gaming industry, and the awareness of its full potential.

Key determinants are to raise awareness of the flexibility and strengths of nurturing the national gaming industry sector, not only for the exceptional economic benefits but also for the potential to activate and maintain the cultural heritage that can be used to promote national brands and international recognisability.

The research's limitation is that it focused on the video game industry and public funding approaches of only five countries in the European Union. As a recommendation for future research, it is suggested that the study be expanded to include the video game industry of all EU countries. Additionally, the research could be extended to include private funding approaches for the video game industry.

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