DEI Gangsters:
Evidence from the Video Game Industry Worldwide

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Abstract

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Keywords: Environmental, social, and governance (ESG); Diversity, equity, and inclusion (DEI); DEI gangsters; Video games; Video game industry

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1. Introduction

Over the past decade, environmental, social, and governance (ESG) has become increasingly recognized as a critical benchmark for evaluating corporate success beyond financial metrics. This shift in evaluative standards has motivated firms to allocate substantial resources toward ESG initiatives. Beyond corporate self-regulation, both regulators and investors have intensified their efforts to promote compliance and encourage firms to adopt environmentally and socially responsible practices (Dimson et al., 2015; Dyck et al., 2019; Bartram et al., 2021; Duchin et al., 2024).

As this trend continues to strengthen, a dominant view has emerged among financial economists that ESG initiatives help improve firm performance (e.g., Pástor et al., 2021; Leonelli et al., 2024; Derrien et al., 2025). Yet, there is a growing concern that the elevated status of ESG may inadvertently incentivize its use for political purposes. Of particular concern is the phenomenon of the ESG gangsters or green mafia, mentioned in the media in which certain entities exploit ESG as a tool for moral or financial coercion, pressuring others to comply for profit-driven or political motives.[1] Despite the growing practice of weaponizing ESG to coerce firms for financial gain or politically agendas, as highlighted by Starks (2023) in her presidential address, their economic consequences remain unexplored.

In this paper, we study how the presence of diversity, equity, and inclusion (DEI) gangsters, those who coerce firms into adopting DEI principles, affects firm performance. We posit that the intervention of DEI gangsters, which we label *DEI gangster activity*, leads to a decline in firm performance. By mandating costly DEI-related practices, these entities can increase firms' operating costs or provoke consumer backlash, if consumers less receptive to DEI. However, it is also possible that *DEI gangster activity*, leads to an increase in firm performance if these DEI-related practices satisfy consumers' tastes. While this question is conceptually straightforward, identifying the causal impact of DEI gangster activity on firm performance presents an empirical challenge. The primary difficulty, undoubtedly, lies in accessing data on such activity.

To tackle this difficulty, we focus on a quasi-experiment setting from the video game industry worldwide. Specifically, we exploit the intervention of Sweet Baby Inc. (SBI) in video games beginning in 2018 as an exogenous shock representing the presence of DEI gangsters

[1] See https://www.theguardian.com/technology/2024/mar/05/leftwing-vulkan-group-claim-responsibility-tesla-factory-pylon-arson-attack-berlin?utm_source=chatgpt.com and https://www.theguardian.com/environment/2023/nov/01/extinction-rebellion-co-founder-guilty-breaking-window-department-transport-hs2-protest-gail-bradbrook.

and examine its effect on game sales. SBI is a Canadian narrative development and consulting firm known for aggressively embedding DEI principles into game content since its founding in 2018. The DEI principles include ideologically driven narrative changes, such as altering character appearances to align with DEI principles, using coercive tactics that "terrify" game companies into compliance.[2] One widely cited example alleges that SBI extorted $7 million from the developers of Black Myth: Wukong in 2024. Since SBI's rise in influence, a growing number of games have been impacted by SBI's intervention, resulting in the inclusion of DEI-related elements. This trend has sparked an anti-DEI movement among players and prominent public figures, such as Elon Musk.[3]

Besides the ease of identifying DEI gangster activity, the video game industry worldwide provides a suitable setting for this analysis for several reasons. First, the video game industry has become the dominant force in entertainment and one of the world's fastest-growing industries, with a market value of $0.28 trillion in 2023; it is expected to grow to $0.66 trillion by 2030.[4] Despite its economic scale, this industry has been largely overlooked by economists. As a major contribution, our study provides one of the first analyses of the determinants of game sales. Second, because SBI's intervention focuses on specific games, which are the main products of video game firms, our game-level analysis provides insights into how ESG issues related to products affect consumer demand, and consequently the profitability of these firms.

We design our empirical analysis at the game level. Our focus is on Steam, the world's largest digital distribution platform. We rely heavily on SteamDB and Gamalytic, two comprehensive third-party databases that track and compile information from Steam. We manually collect a list of games released on Steam between January 2015 and December 2024 from SteamDB. Using these game titles, we then retrieve the detailed game-level information from Gamalytic. To gauge firm performance, we use two main variables: unit sales, defined as the total number of game units sold per month, and dollar sales, defined as the total game revenue in U.S. dollars generated per month. The final dataset covers 9,010 games worldwide over the period from January 2015 to December 2024.

We employ the difference-in-difference (DID) analysis to explore how SBI's intervention affects game sales. A key challenge lies in identifying which games were influenced by SBI, due to the lack of comprehensive public disclosures and the multifaceted nature of DEI-related

[2] The CEO of SBI admitted to using intimidation tactics in 2019 Game Developers Conference. See: https://www.youtube.com/watch?v=GfMsxjWgUbI.
[3] https://www.cbc.ca/radio/thecurrent/sweet-baby-inc-gamergate-1.7149888.
[4] See https://www.fortunebusinessinsights.com/zh/gaming-market-105730.

modifications.[5] These modifications can manifest in various elements of a game, including graphics, character design, narrative structure, and thematic content, making it difficult to systematically detect SBI's influence.

To address this identification challenge, we leverage artificial intelligence (AI) models—specifically, DeepSeek R1—as reasoning agents to help detect potential SBI intervention. The rationale is that games with characteristics that render them more amendable to DEI-oriented modifications are more likely to be targeted for intervention by SBI. As a starting point, we manually collect data on games containing DEI elements from deidetected.com, a community-driven website that lists games reportedly influenced by SBI, as identified by players. Using this dataset as the training input, we instruct DeepSeek R1 to assign an *SBI* score ranging from 1 to 5, reflecting the likelihood of SBI-related DEI influence for all games in our sample.

To validate this measure, we first show that the *SBI* score effectively captures SBI-related DEI influence by examining its association with two key game characteristics: the presence of lesbian, gay, bisexual, transgender, questioning, or queer, and other identities (LGBTQ+) elements, which constitute a core dimension of DEI; and a story-rich genre classification, which is more likely to involve narrative-level modifications. Moreover, the *SBI* score correlates positively with the female protagonist genre, a common target for DEI initiatives, and negatively with the player vs. player mode, which tends to be less susceptible to narrative intervention. At the country level, the *SBI* score is also positively related to national DEI tendencies, as measured by the LGBTQ+ equality index.

Our baseline DID analysis reveals that games with a high likelihood of SBI's intervention experience a significant decline in sales following that intervention, indicating that DEI gangster activity has a negative impact on firm performance. In terms of economic magnitude, compared to unaffected games, SBI's intervention is associated with a 5.26% larger decline in unit sales and a 7.69% larger decline in dollar sales. Our dynamic DID test further indicates that the negative effect on game sales emerges only after SBI's intervention, with no evidence of pre-treatment trends. This lends support to the validity of the parallel trends assumption underlying our DID framework.

We conduct two placebo tests to confirm that our results are not driven by chance. First, we randomly assign pseudo *SBI* scores to games and re-estimate our baseline DID analysis. This procedure is repeated 5,000 times. Second, we use 2016 and 2017 as pseudo-event years and

[5] In fact, SBI often hides its actions. For example, SBI deleted games that it was involved in from its home page after player backlash. Moreover, SBI often denies its involvement in specific games only to be discovered by players. A vivid example is the game Unknown 9: Awakening.

re-estimate our DID specification accordingly. In both tests, the estimated effects are statistically insignificant and substantially smaller in magnitude compared to our main results, reinforcing the validity of our findings. In addition, we obtain similar results through a battery of robustness checks.

Having established the causal impact of DEI gangsters on game sales, we next investigate whether this effect is driven by the two underlying economic channels proposed in our hypothesis: the *development costs channel* and the *players' DEI backlash channel*. First, we test the *development cost channel*, which posits that SBI's intervention imposes additional development costs, either directly through consulting fees or indirectly through the integration of DEI-related content. These costs may constrain developers' ability to invest in game quality, leading to a subsequent drop in sales. Because developers typically operate under limited budgets, we expect games facing tighter financial constraints to be more vulnerable to such cost increases. To test this conjecture, we focus on early access (EA) games. This game category is characterized by developers releasing incomplete versions of their games to raise funding, a practice commonly employed by financially constrained studios. Consistent with the *development cost channel*, we find that the negative impact of SBI's intervention is significantly more pronounced among EA games.

Second, we examine the *players' DEI backlash channel*, which argues that players may hold negative attitudes toward DEI-related content imposed by SBI and reduce their demand. If this *players' DEI backlash channel* is indeed at work, we expect the impact of SBI's intervention to be more (less) pronounced among players with lower (higher) DEI preferences. To test this prediction, we construct a proxy for player-level DEI preferences based on the proportion of players originating from countries with strong pro-DEI tendencies, measured by the equality index. Consistent with the *players' DEI backlash channel*, we find that the negative impact of SBI's intervention is significantly stronger for games with a larger share of players from countries with lower measured DEI preferences.

We perform several additional heterogeneity analyses to reinforce our conclusion that DEI gangster activity adversely affects game sales. First, when accounting for game-level heterogeneity, we find that the negative effect of SBI's intervention is more pronounced in game types that are especially sensitive to DEI-related interventions, such as story-driven games, third-person perspective games, and games with romance content. For example, story-driven games rely heavily on narrative, dialogue, and character development. Consequently, DEI-related modifications to characters and dialogue are highly salient to players and may fail to align with players' demand.

Second, we examine country-level evidence to further sharpen our understanding of the factors that drive our results. We first focus on a single-country setting and exploit the cross-state variations in DEI within the United States (U.S.) by taking advantage of red (predominantly Republican-voting) and blue (predominantly Democratic-voting) states. We show that the impact of SBI's intervention is concentrated in red states, where players exhibit stronger anti-DEI preferences. Extending this analysis to the international level yields similar results, showing that the impact of SBI's intervention is stronger in countries with lower support for DEI.

Third, to further identify the effect of SBI's intervention on game sales, we exploit anti-DEI laws in U.S. red states as a plausible shock. These legislative events raise public awareness of anti-DEI concerns. Using a triple DID test, we show that after the effectiveness of anti-DEI laws, the negative impact of SBI's intervention on game sales intensifies.

Finally, an alternative explanation is that our findings may be driven by reverse causality: games with lower quality may voluntarily seek assistance from SBI, rather than being coerced into adopting DEI changes. To alleviate this concern, we conduct two tests. First, we stratify the sample by game quality and show that SBI's intervention significantly reduces sales in both high- and low-quality game groups. Second, we examine hobbyist games, a special category of games typically developed for passion rather than profit. These games are generally less susceptible to coercive tactics due to their non-commercial nature. However, they may voluntarily engage SBI to enhance DEI representation. We find that the negative effect of SBI is mitigated among hobbyist games.

Our paper contributes to two strands of literature. First, our paper is among the first to investigate the economic consequences of politically driven DEI initiatives. Existing studies primarily emphasize the benefits of ESG initiatives. For example, ESG initiatives may benefit shareholders by hedging against ESG risk (Lin et al., 2017; Albuquerque et al., 2019; Huynh and Xia, 2020; Bae et al., 2021; Ding et al., 2021; Bansal et al., 2022; Pástor et al., 2021 Amiraslani et al., 2023; Döttling et al., 2024; Hoepner et al., 2024), and high-ESG stocks could deliver high future returns relative to low-ESG stocks (Pástor et al., 2022; Welch and Yoon, 2022; Ardia et al., 2023).

Moreover, some research shows that investors demand ESG disclosures to inform their investment decisions (Ilhan et al., 2023; Krueger et al., 2024), and that they are increasingly concerned about ESG risks, leading to growing demand for high-ESG assets (Bolton and Kacperczyk, 2021; 2023; Hsu et al., 2023; Aswani et al., 2024; Garel et al., 2024). Additionally, ESG and DEI initiatives promote firm performance, particularly by boosting customer demand

(Houston et al., 2024; Duan et al., 2024; Xiao et al., 2025; Dube et al., 2023; Agarwal et al., 2023; Meier et al., 2023; Christensen et al., 2023; Leonelli et al., 2024; Derrien et al., 2025; Cen et al., 2025), and firms tend to conduct ESG washing to achieve benefits or avoid costs (Baker et al., 2024; Duchin et al., 2024; Parise and Rubin, 2025). Our work differs by highlighting the potential dark side of DEI initiatives. Specifically, we document a decline in firm performance following politically driven DEI initiatives, suggesting that these interventions can have unintended negative consequences.

Second, this paper adds to the emerging literature on the video game industry. Barwick et al. (2025) provide evidence that playing video games reduces students' GPAs. Mo et al. (2023) show that higher air pollution levels diminish players' competitive performance. Chuang et al. (2024) find that adults who are better-looking are not attracted to video games. Huang and Morozov (2025) find that live streaming promotes player usage. To the best of our knowledge, this is the first study to provide systematic empirical evidence on the determinants of game sales in an international setting.

2. Background and hypothesis development

2.1. Background on Sweet Baby Inc.

SBI is a Canadian narrative development and consulting firm founded in 2018 that offers consultation on video game narrative design. The core goal of SBI is to promote DEI principles within game narratives. To achieve this goal, SBI's intervention primarily targets three domains:

First, character representation, a topic frequently discussed among players. This practice involves modifying established character archetypes through demographic changes, such as altering a character's race, and implementing aesthetic redesigns to align with contemporary inclusivity standards. For illustration, Figure 1 provides a visual analysis of video games featuring DEI-related content ("DEI games"). One common modification involves altering a character's physical appearance. As observed in Panel (a), the character's design in the modified version can be perceived as less conventionally appealing. In addition to aesthetic adjustments, DEI-related modifications also involve changing a character's race. As shown in Panel (b), a character originally depicted as White was redesigned as Black. In Figure A1, we provide additional examples of character-related changes. These alterations are generally implemented to promote diversity in character portrayal.

Second, narrative restructuring. This involves integrating identity-focused subplots (e.g., LGBTQ+ representation or racial justice themes) and including didactic dialogue that addresses contemporary sociopolitical issues, such as systemic oppression. Panel (c) shows a

recent example, featuring a Black samurai in a game set in 16th-century Japan. The historical authenticity of this portrayal became the subject of public debate, as illustrated by comments such as Elon Musk's assertion that 'DEI is killing art.' Panels (d) and (e) show game options and dialogue related to LGBTQ+ representation. Specifically, Panel (d) shows that the game offers an option allowing a character to be transferred as transgender. Panel (e) shows DEI-related educational content within the game, which instructs players on the use of appropriate pronouns for non-binary individuals.

Panels (f) and (g) further illustrate additional examples of LGBTQ+ elements in video games. Specifically, Panel (f) shows an LGBTQ+ element related to romance, with a male touching another male in an intimate way, and Panel (g) shows an example of a transgender character being added to a game. Finally, Panel (h) shows the addition of elements related to sociopolitical issues. Specifically, the game includes the rainbow flag, which is, perhaps, the most salient symbol of the LGBTQ+ community.

Third, comprehensive sensitivity vetting, a content review process aimed at identifying and removing material deemed non-inclusive. For example, Panel (i) shows an example of the assigning of gender identities to a robot. Panel (j) shows that game character customization has shifted from traditional gender selection to broader classifications such as 'Body Type,' thereby making gender less salient and aligning with DEI principles.

For comparison, we also provide some examples of non-DEI games and show them in Panel (k) and (l). These games include the famous The Legend of Zelda: Breath of the Wild, a game that is enjoyed by players around the world and Helldiver 2. The developers of Helldivers 2 have publicly announced their refusal to add DEI-related elements to the game.

[Insert Figure 1 here]

[Insert Figure A1 here]

SBI often relies on coercive tactics that force game developers and publishers into compliance. At the 2019 Game Developers Conference, Kim Belair, CEO of SBI, was reported to have described SBI's consulting approach as involving 'terrifying,' a strategy that some critics have likened to coercion or blackmail. She allegedly also encouraged consultants to 'terrify' marketing teams with the prospect of public backlash if they resisted implementing DEI-related changes. In a recent high-profile case, SBI was accused of demanding a $7 million consulting fee from Game Science, the developer of Black Myth: Wukong, with the request characterized by critics as 'genuine extortion.'

At the same time, SBI has faced mounting backlash from segments of the gaming community for its aggressive imposition of DEI elements into games. In January 2024, a Steam curator group titled "Sweet Baby Inc Detected" gained over 355,000 followers, with a companion discord server. While originally framed as a watchdog group to track DEI influence, the platform became associated with hostile rhetoric, including racist, sexist, and transphobic content. The controversy intensified following public criticism from figures such as Elon Musk, leading to harassment campaigns targeting SBI employees and affiliated journalists. These included reported threats and doxing attempts.

Interestingly, SBI's intervention also appears to contribute to the growing skepticism toward broader ESG initiatives. For example, Elon Musk stated, 'Stop killing art with woke propaganda.' Some players directly blame ESG for what they perceive as the decline in game quality, claiming that 'ESG has ruined gaming.'[6]

2.2. Hypothesis development

Prior research suggests that ESG initiatives can benefit firms by reducing risk and improving performance (see, e.g., Hong and Kacperczyk, 2009; Ferrell et al., 2016; Lin et al., 2017; Albuquerque et al., 2019; Bolton and Kacperczyk, 2021; 2024; Gantchev et al., 2022; Welch and Yoon, 2022; Stark, 2023; Hsu et al., 2024; Hoepner et al., 2024; Akey et al., 2024; Krueger et al., 2024; Derrien et al., 2025; Leonelli et al., 2025). However, this literature largely examines firm-led or investor-driven initiatives, in which the coercive element of an external gangsters is absent. We posit that DEI initiatives imposed by a DEI gangsters might harm firm performance. In other words, SBI's intervention might lead to a decline in game sales. This hypothesis rests on two reasons: the increased *development costs* and *players' DEI backlash*.

First, ESG-related objectives can be costly, forcing firms to navigate a trade-off between social goals and financial performance. In a voluntary setting, firms can be assumed to operate near an optimal balance where the marginal benefit of an ESG initiative equals its marginal cost, thereby maximizing firm value. If the optimal balance is not reached, firms can operate in chasing the target by themselves. However, when an external entity like SBI disrupts this balance, it may compel firms to allocate resources toward DEI initiatives beyond this optimal point. Consequently, firm performance may decline following such an intervention.

For video game firms, SBI's intervention can force the firm to incur higher development

[6] See, https://www.youtube.com/watch?v=b1dqmPJDCoA and https://www.reddit.com/r/Destiny/comments/1b7x0lx/apparently_esg_scores_have_ruined_gaming/.

costs, either directly through consulting fees or indirectly through the integration of DEI-related content into the game. This increases development costs may divert resources away from investing in critical commercial functions. Such misallocation of resources can lead to reductions in operating and marketing expenditures. Since these commercial activities are primary drivers of consumer awareness and demand, the resulting underinvestment in core operations erodes competitive positioning. Consequently, we posit that this resource substitution directly leads to a decline in game sales. We label this causal pathway the *development costs channel*.

Second, SBI's intervention requires firms to incorporate DEI-related content into games, such intervention may create a mismatch with the preferences of players. For example, SBI may mandate that game developers add new characters aligned with DEI principles or modify storylines to meet DEI objectives. These externally mandated changes may not align with the tastes of players, particularly those who resist specific DEI implementations. In particular, DEI-related elements such as LGBTQ+ characters or romantic relationships involving these characters may generate negative player reactions. We posit that if a significant segment of players derives less utility from the modified game, aggregate demand for the game is likely to fall. Consequently, game sales might decline. We refer to this as the *players' DEI backlash channel*.

The above reasoning leads to the following hypothesis.

H1: *Games experience a decline in sales following SBI's intervention.*

Alternatively, SBI's intervention may lead to an increase in game sales by aligning product offerings with evolving consumer preferences, thereby expanding potential market reach. Prior literature suggests that many consumers consider ESG initiatives when making purchase decisions and prefer ESG-responsible products (e.g., Leonelli et al., 2024). By integrating diverse characters, narratives, and related DEI initiatives, SBI's intervention may increase utility and satisfy a growing demand for inclusive content among players who prefer DEI content (DEI players). In a scenario in which DEI players dominate the market, it is reasonable to expect that SBI's intervention will lead to an increase in aggregate demand for the game. Consequently, game sales might rise. We therefore hypothesize:

H2: *Games experience an increase in sales following SBI's intervention.*

3. Data and variable construction

3.1. Steam and main variables

Steam is a digital distribution and gaming platform officially launched on September 12, 2003 developed by Valve Corporation. Initially, it served as a patching tool for Valve's flagship video game—Counter-Strike. Steam rapidly evolved in 2005 by allowing third-party game launches and sales, becoming a leading online game store that provides a seamless way to buy, download, and update games digitally.

Steam experienced a period of explosive growth between 2008 and 2012, expanding from a modest digital launcher into a dominant gaming platform, when it held an estimate gaming platform 50–70% share of the PC game download market, with over 40 million registered accounts.[7] This upward trajectory continued, and by early 2020, Steam had overtaken Microsoft's Xbox Live and Sony's PlayStation Network in monthly active users to become the largest gaming platform globally. Subsequent milestones, including reaching 132 million monthly active users in 2021 and a record of over 40 million concurrent users in late 2024, have solidified its status as the world's preeminent digital gaming ecosystem.

To examine how SBI's intervention affects game sales, we combine data from several sources. Using web scraping tools and manual collection, we first assemble a list of games released on Steam between January 2015 and December 2024 from SteamDB, which aggregates publicly available metadata from Steam. Specifically, we extract each game's App ID, which is a permanent numeric identifier unique to each product on Steam (like a PERMNO for securities in the WRDS database), as well as the game title. We retain only titles classified as Games or Downloadable Content (DLC) and exclude any DLC that requires the base game to play.[8]

Game-level data are assembled by three main providers: Gamalytic, SteamDB, and Metacritic. Using App ID, we retrieve detailed sales and performance data from Gamalytic,

[7] In 2008, it crossed 15 million accounts, with holiday season sales jumping by 158% over the previous year. Growth accelerated even further in 2009: accounts surpassed 25 million, unit sales increased over 205%, and concurrent users hit 2.5 million. That momentum continued through 2010–2011, with active accounts climbing to 30 M in 2010, and sales doubling year over year for the seventh straight year in 2011. This period coincides with the introduction of major features—Steamworks, community tools, Workshop, free-to-play support, Early Access, and cross-platform expansion—which unlocked rapid adoption by both players and developers. By 2012, Steam had become a powerhouse, repeatedly doubling its growth, and setting the stage for its ongoing dominance in the digital game distribution space.

[8] DLC is additional digital material released for a game after its official launch. DLC can include everything from new levels, storylines, and characters to cosmetic items like skins or outfits, and downloadable expansions or game modes. It may be offered for free or sold, sometimes sold individually or bundled into "season passes", which grant players access to multiple future releases at a discounted rate. This model helps game developers extend a game's lifespan and revenue, but can blur the line between content created post-launch and content that could've been included originally. In many cases, dependently DLC is included in "deluxe" or "special edition" versions of games, offering bundled content at a premium price. Hence, we exclude them.

including estimated monthly unit sales, dollar revenue, player activity, wishlists, pricing data, and other game characteristics. Developer and publisher information are also obtained from Gamalytic, with country-level metadata collected manually.[9] Metacritic is used to obtain critic scores, using manual matching based on game titles. Twitch live stream data are sourced from SteamDB to construct a dummy variable indicating whether a game has live-streaming presence on Twitch, a popular platform for broadcasting gameplay. Developer and publisher location data are manually collected.

We use two primary measures to evaluate the sale performance of a specific game: *Units* and *Sales*. *Units* is defined as the total number of units sold for the game in each month, while *Sales* is calculated as the U.S. dollar sales sold for the game in each month. For each game, Gamalytic provides accumulative units of game sales and dollar sales. Hence, for each game-month, we compute *Units* and *Sales* using the change in accumulative units of game sales and dollar sales.

Gamalytic provides game-level data covering the period from January 2015 to December 2024. Our final sample spans this period and includes a total of 9,010 unique games. The control variables used in our analyses are listed and defined in Table A1.

3.2. Measuring games influenced by SBI

Because SBI's modifications can span dialogue, lore, character design, and visual elements, making direct identification difficulty, we employ generative AI models as reasoning agents to detect games influenced by SBI. By providing the AI with game-related information, we leverage its Internet search capabilities and information synthesis abilities to assess the extent to which a specific game is likely to be influenced by SBI in a standardized and scalable manner.

Specifically, we adopt a two-step process. First, we construct a training dataset consisting of games that are directly influenced by SBI, allowing the AI model to learn from observed outcomes. We start with a hand-collected sample of games reported as influenced by SBI from deidetected.com, a website founded by the player Kabrutusrambo and backed by over 210,000

[9] A game developer is primarily responsible for the creation of video games, including designing gameplay mechanics, writing code, producing art and sound assets, and conducting testing to identify and fix bugs or technical issues. In contrast, a game publisher is typically responsible for financing, marketing, and distributing the game to the public. Publishers often support developers by providing funding, managing promotional campaigns, setting release schedules, and ensuring the game reaches consumers through various platforms such as consoles, PCs, or mobile devices. While developers focus on building the game itself, publishers play a crucial role in bringing the product to market and ensuring its commercial success. In many cases, publishers are also involved in the development process, particularly when they provide resources, impose deadlines, or influence design decisions. Importantly, in some instances, the developer and publisher may be the same entity.

members. This website lists games identified by players as influenced by SBI, these games are labeled as "DEI DETECTED."

In the second step, we rely on DeepSeek-R1, a large language model, and instruct it to assign an SBI score using the provided information and game names. The full prompt is as follows: "*Forget all previous instructions. As a video game expert, please determine whether a game is influenced by Sweet Baby Inc. based on the following criteria:*
Narrative-driven (story-focused)
Representation of cultural diversity
Reflection of social issues
Genre relevance (refer to previously collaborated genres)
Team collaboration history
Known list of collaborated games: [Dota Underlords | Alien: Rogue Incursion | Life is Strange: Double Exposure | Lost Your Marbles | Neo Cab | Assassin's Creed Valhalla | Shadow Gambit: The Cursed Crew | Gotham Knights | Dungeons & Dragons: Dark Alliance | SPACE TOW TRUCK - ISAAC NEWTON's Favorite Puzzle Game | Dustborn | STREET UNI X | Psychroma | Forspoken | Homeworld 3 | Far Cry New Dawn | SILENT HILL | Old School RuneScape | Concord | Capes | FINAL FANTASY VII REBIRTH | Goodbye Volcano High | Hyper Light Breaker | Unknown 9: Awakening | Suicide Squad: Kill the Justice League | Sable | Battle Shapers | Tales of Kenzera™: ZAU | Kingdom Eighties | The Crew Motorfest | Flintlock: The Siege of Dawn]

You have five options: Very Low, Low, Medium, High, Very High. Choose one.
Remember, provide the answer directly—do not include reasoning or any analysis."

We then assign numerical values to qualitative categories as follows: Very Low = 1, Low = 2, Medium = 3, High = 4, and Very High = 5. As such, we obtain the measure of games influenced by SBI, we refer to it as the *SBI* score.

3.3. Sample distribution

Panels A and B of Table 1 present the country-level distribution of aggregate unit and sale counts, as well as the average *SBI* score and average game price, based on the headquarters location of game developers and publishers, respectively. Columns (1) and (2) show the country-level counts of observations and games, based on developers' and publishers' headquarter locations (Panel A and Panel B, respectively). Specifically, in column (2) of Panels A and B, the United States has the most games among all countries, with 3,405 based on

developer headquarters (Panel A) and 3,501 based on publisher headquarters (Panel B), followed by France and Japan. In contrast, many countries, such as Iceland, are represented by only a single game listed on Steam.

When focusing on the aggregate sale measures in columns (3) and (4) of Panels A and B, the pattern differs. Specifically, for developers, the U.S. records the highest total units sold (367.578 million) and sales revenue (4.895 billion), followed by Japan, which ranks second in both units (166.749 million) and sales (4.046 billion). France ranks sixth in both metrics, with 104.635 million units and 1.212 billion in sales. These results reflect the dominant market positions of the U.S. and Japanese gaming industries, while the French development sector maintains a smaller, though significant, global aggregate footprint.

SBI also displays large cross-country variations as shown in column (5) of Panel A. In particular, Malta and Cameroon record the highest average *SBI* scores at 3.000. In contrast, several countries—including Chile, Costa Rica, Egypt, Estonia, Iceland, Ireland, Moldova, Mongolia, and Papua New Guinea—report the lowest score of 1.000. However, these results should be interpreted with caution, as Malta and Cameroon are each represented by only a single game, making their scores highly sensitive to outliers. It is therefore likely that the specific type of game in these countries, rather than a broad national trend, explains their high scores. As we show later, a country's DEI tendency is indeed a key determinant of its *SBI* score. Average game prices also vary widely, ranging from $1.635 in Papua New Guinea to $48.359 in Malaysia. Publisher-based results (columns (5) and (6) of Panel B) show similar patterns.

Figure 2 visualizes these geographic variations by plotting the global distribution of units sold, sales revenue, game counts, and *SBI* scores. Darker shading indicates a higher sample mean for the respective measure. Figure A3 plots the U.S. geographic distribution of gaming industry metrics in a similar manner to Figure 2. As shown, Texas, California, and Washington rank among the top three states with the most dominant game industries in the U.S., whereas Nebraska, Alabama, and Connecticut have limited video game industry presence in the U.S.

Panel C of Table 1 presents the sample distribution across nine game genres. We define a game's genre based on its most popular user-defined tag on Steam. The nine categories include: action, adventure, casual, role-playing, racing, simulation, sports, strategy, and other for remaining titles. Columns (1) through (4) indicate that the number of observations, the number of games, and the aggregate sale vary significantly across genres. Action games lead with the highest counts—218,313 observations, 4,192 games, 935.876 million units sold, and 19.273 billion in sales. In contrast, sports games represent the smallest segment, with only 1,008 observations, 18 games, 784.657 million units, and 4.882 million in sales.

Moreover, as observed in column (5), the genre that most likely to be influenced by SBI is adventure, with the highest *SBI* score of 1.677, whereas racing has the lowest *SBI* score of 1.014. Finally, column (6) shows that average game prices range from $5.584 (casual) to $24.200 (role-playing) across genres.

[Insert Table 1 here]

[Insert Figure 2 here]

[Insert Figure A3 here]

3.4. Summary statistics

Table 2 presents the summary statistics for variables used in our analysis over the period from January 2015 to December 2024. For the 9,010 games in this study, we have 455,691 game-month observations. The average *SBI* score in our sample period is 1.428, with a median value of 1.000. On average, a game successfully sells units of 18.106 and generates sales of 45.946, with substantial standard deviations (3.115 and 3.943 for *Units and Sales*, respectively), revealing considerable heterogeneity in commercial performance across games.

These games have an average *Price* of $11.36 with a median of $6.99, while the interquartile range ($2.39 to $14.99) captures the typical pricing corridor for most Steam games. We also control for player engagement data, including the logarithmic value of 1 plus the number of players (*Ln(Players)*), average playing time. Because average playing time has an upward time trend, we adjust it by scaling it with the number of months the game has been listed to obtain the time-adjusted average playing time (*APT adj*), and the increase in followers (*Followers*). On average, a game in our sample attracts 4.614 players with a time-adjusted average playing time of approximately 0.413 hours, and 0.025% increase in followers.[10]

Finally, the mean values for *Top wish*, and *Twitch* are 0.002, and 0.565, respectively. These results indicate that only 0.2% of observations represent games appearing on Steam's top wishlist and 56.5% of game-month observations have associated Twitch streaming activity, suggesting that streaming presence has become common though nearly half still lack significant broadcast visibility.

[Insert Table 2 here]

[10] Note that *APT adj* can be negative because some games allow certain players to play the game before its release in the form of open beta testing and pre-order access. Nevertheless, our results are quantitatively similar if we replace *APT adj* with *APT*.

3.5. Validating SBI measure

Given that our method for measuring game exposure to SBI is new, it is essential to validate our measure. To achieve this goal, we employ several game characteristics known to increase a game's vulnerability to SBI intervention. Specifically, we construct a set of dummy variables: whether the game contains LGBTQ+ content (*LGBTQ+*), which equals 1 if a game is tagged as containing LGBTQ+ content, and 0 otherwise; whether the game is classified as *Story Rich*, which equals 1 if a game is tagged under the story rich label, and 0 otherwise; whether the game includes player-versus-player functionality (*PvP*), which equals 1 if a game includes PvP functionality, and 0 otherwise; and whether the game features a female protagonist (*Female*), which equals 1 if the game features a female protagonist, and 0 otherwise.

Games with LGBTQ+ content, rich story, and female protagonists are more likely to be modified by SBI, given SBI's DEI focus. By contrast, games with player-versus-player functionality are less likely to be affected because they derive their value from mechanics and competition rather than narrative or character representation. These games offer fewer opportunities for DEI-related modifications. Therefore, we expect our *SBI* score to be positively correlated with *LGBTQ+*, *Story Rich*, and *Female*, and negatively correlated with *PvP*.

[Insert Table 3 here]

Panel A of Table 3 presents the results from our validation tests. We show that our *SBI* score is positively and significantly associated with *LGBTQ+*, *Story Rich*, and *Female*, and negatively and significantly related to *PvP* at the 1% significance level, with the inclusion of control variables, time, developer country, and publisher country fixed effects.[11] When all four characteristics are included simultaneously in the last column, the coefficients remain highly significant, underscoring the robustness of our results. These results suggest that our *SBI* score effectively captures game characteristics aligned with SBI's consulting focus.

Next, we validate our measure by testing the relation between *SBI* and country-level DEI tendencies. We use the equality indices acquired from https://www.equaldex.com as proxies for DEI tendencies. This website provides three equality indices to proxy for certain countries' tendencies: the *legal index*, which measures the status of LGBTQ+ rights, laws, and freedoms;

[11] Untabulated analyses show that our results are robust to using univariate regressions.

the *public index*, which measures public attitude towards LGBTQ+ people; and the *equality index*, which is the average value of the legal index and the public index. Each index ranges from 0 to 100, with high values indicating high DEI preference and low values indicating low DEI preference. The website only provides country-level data and does not track the indices over time.

Because both developers and publishers contribute significantly to game creation, we test the relation between *SBI* and the DEI tendencies of developers' countries and publishers' countries, respectively. Accordingly, we define *legal index*^{dev} as the *legal index* for the developers' countries and *legal index*^{pub} as the *legal index* for the publishers' countries. The *public index* and *equality index* for both developers' and publishers' countries (*public index*^{dev}, *public index*^{pub}, *equality index*^{dev}, *equality index*^{pub}) are defined similarly. Intuitively, games are more vulnerable to SBI's intervention if the developer or publisher is from a country with high DEI tendencies, as measured by high equality indices.

Panel B of Table 3 presents the results using country-level DEI tendencies for developers and publishers. As expected, the *SBI* score is positively and significantly correlated with all three equality indices for both developer and publisher countries, with associations significant at the 5% level or better across nearly all specifications. These models include our standard control variables and time fixed effects. The final column demonstrates the robustness of this finding: when both the developer (*equality index*^{dev}) and publisher (*equality index*^{pub}) indices are included in the same regression, both remain significant.[12] In the last column, we include the *equality index*^{dev} and *equality index*^{pub} in the regression and find that the result hold well. These results suggest that our SBI score effectively captures country-level DEI tendencies.

Finally, we conclude our validation by analyzing the time-series trend of our *SBI* score. Figure 3 presents the time series pattern of the annual average of *SBI* score from 2015 to 2024 (blue line with markers). The series exhibits a distinct upward trend, with a significant acceleration beginning in 2020. To benchmark this result against a real-world proxy, we also plot the number of games publicly identified as having received DEI consultation (Source: deidetected.com). The co-movement of our *SBI* score and this external data series suggests that our *SBI* score successfully measures the intended phenomenon.

[Insert Figure 3 here]

[12] The *legal index* and *public index* are omitted because the equality index is the average of these two indices. In the last column, we exclude observations with identical publishers and developers.

4. Main results

4.1. Baseline findings

We first examine how SBI affects game sales. We conduct this analysis by estimating a DID model with continuous treatment and including game and time fixed effects. Our baseline panel regression is as follows:

$$Sales_{i,t} = \alpha + \delta_t + \varphi_i + \beta \times SBI_i \times Post_t + \gamma \times Z_{i,t} + \varepsilon_{i,t},$$

where the dependent variable, $Sales_{i,t}$, represents the number of game sale units and the number of game dollar sales (*Ln(Units)* or *Ln(Sales)*) for game *i* in month *t*. SBI_i is the DeepSeek-assigned score, which ranges from 1 to 5 and quantifies the likelihood of a game's being influenced by SBI.

$Post_t$ is an indicator equal to 1 if the year is 2020 or after, and 0 otherwise. Although SBI was founded in 2018, its impact on games requires time to materialize for several reasons: first, SBI needs to establish operational influence over game developers and publishers. Second, developers must choose to incorporate design modifications. Third, these modifications must be implemented in game updates, which often have a development cycle of at least one year.[13] Therefore, we choose 2020 as the beginning year of the post-treatment period.

$Z_{i,t}$ represents a vector of game-level control variables. Detailed variable definitions are provided in Appendix A. Finally, we include year-month time fixed effects (δ_t) and game fixed effects (φ_i). Given that we include both time- and game-fixed effects in our regression, the variables SBI_i and $Post_t$ are subsumed by the game- and time-fixed effects, respectively. Standard errors are double clustered at the game- and year-month levels. The main variable of interest is the coefficient of the interaction term between SBI_i and $Post_t$, $SBI_i \times Post_t$, which captures the differential treatment effect of SBI's intervention on game sales. We expect it to be significantly negative (positive) based on ***H1*** (***H2***).

We present the regression results in Table 4. The estimated results show that the coefficient estimates of *SBI*×*Post* are negative and statistically significant at least at the 5% level across all specifications. This indicates that games influenced by SBI experience a significant decline in sales. Moreover, the coefficient estimate of *SBI*×*Post* is not only statistically significant but also economically meaningful. On average, the number of units sold and total game sales decrease by 5.26% and 7.69%, respectively, following the SBI's intervention.

[13] For example, DLC, an important source of game content updates, typically requires one year or even longer (e.g., Cyberpunk 2077: Phantom Liberty).

The results also provide information on other variables that affect game sales. We observe that the number of players (*Ln(Players)*), the number of followers (*Followers*), and being on a top wishlist (*Top wish*) are strongly and positively associated with game sales, as anticipated. By contrast, *APT adj* is negatively correlated with game sales, perhaps indicating that games with higher engagement requirements or difficulty deter potential players. Interestingly, higher Twitch viewership is associated with lower sales, potentially indicating a substitution effect where viewing supplants purchasing the game.

[Insert Table 4 here]

4.2. Dynamic effects

To explicitly examine the parallel-trends assumption, we examine the dynamic effect of SBI's intervention. Following Bertrand and Mullainathan (2003), we construct eight year-specific indicator variables: -4^{-}, -3, -1, 0, 1, 2, 3, and 4, which represent relative years around the event year, i.e., 2020. The indicator -4^{-} equals 1 if the year is 2016 or earlier, and 0 otherwise; -3 equals 1 if the year is 2017, and 0 otherwise; and so forth for the remaining years.

We then re-estimate the baseline DID regressions by replacing the interaction term *SBI*×*Post* with the interaction terms between SBI_i and each of these year indicators. All other control variables remain as specified in the baseline DID model. The regression specification is as follows:

$$Sales_{i,t} = \alpha + \delta_t + \phi_i + \sum_{\tau \in \{-4^{-},-3,-1,0,1,2,3,4\}} \beta_\tau \times SBI_i \times \tau + \gamma \times Z_{i,t} + \varepsilon_{i,t},$$

where the coefficients of interest are $\beta_{-4^{-}}$, β_{-3}, and β_{-1}. If the parallel-trends assumption were violated, we would expect to observe statistically significant coefficients for these terms.

We present the dynamic effect results in Table 5. The coefficients of $\beta_{-4^{-}}$, β_{-3}, and β_{-1} are statistically insignificant at conventional levels across all regressions, suggesting that no preexisting trends in game sale before SBI's intervention. The coefficients of β_1, β_2, β_3, and β_4 are negative and significant. The pattern in the dynamic analysis is consistent with a causal relation between SBI's intervention and game sales. These results suggest that the parallel-trends assumption of the DID model holds.

Figure 4 maps out the evolution of game sales surrounding the time of SBI's intervention, revealing the difference in game sales between games with differential degrees of SBI_i surrounding the shock. Consistent with the dynamic DID estimations, the results graphically show that the difference in sales across games with varying *SBI* scores was statistically

insignificant from zero during the four years preceding SBI's intervention. This lack of a significant pre-trend supports the parallel trends assumption, suggesting that in the absence of SBI's intervention, the sales trajectories of these game groups would likely have remained stable and parallel. However, the treatment coefficient becomes significantly negative in relative year *1* (2021) and increases in both magnitude and statistical significance for relative year *2* (2022) and thereafter, indicating that the intervention of SBI persistently and increasingly affecting game sales in the post-intervention period.

Overall, the empirical evidence from Table 5 and Figure 4 reinforces our interpretation that games with differential *SBI* scores share a similar sales trend prior to the intervention of SBI, thereby satisfying the parallel-trends assumption required by the difference-in-differences estimation.

[Insert Table 5 here]

[Insert Figure 4 here]

4.3. Pseudo effects

It is still plausible that our baseline findings are driven purely by chance. To mitigate this concern, we conduct two placebo tests. First, we conduct a pseudo treatment test. Specifically, we randomly assign the pseudo *SBI* score to games but preserve the distribution of the actual time. We next re-estimate our baseline regression model. Finally, we repeat these procedures 5,000 times.

In Panel A of Table 6, we present the distribution of the coefficients of *SBI*×*Post* from the DID regressions by reporting the mean, 5th percentile, 25th percentile, median, 75th percentile, and 95th percentile of the pseudo estimates of the interaction term and the corresponding *t*-statistics. For comparison, we also present the actual estimates of the interaction term in the first column. We find that both the mean and median of the placebo coefficients of the interaction terms are close to zero and significantly larger in magnitude than the actual estimates, with the corresponding *t*-statistics being small and insignificant. Specifically, for *Ln(Units)*, the mean and median of the placebo coefficients are both 0.000, compared with the actual coefficient, -0.054. Similarly, for *Ln(Sales)*, the mean and median of the placebo coefficients are both 0.000, while the actual coefficient is -0.080. Furthermore, most of the placebo estimates are statistically insignificant.

We also complement our findings with graphical evidence. In Figure 5, we plot the distributions of the coefficient estimates (the left two panels), the corresponding *t*-statistics (the

right two panels) of the coefficients of *SBI*×*Post* and the actual estimates. The distributions in all four panels of Figure 5 exhibit normal distributions with the means of zero, indicating that the placebo *SBI* scores are not likely to yield any statistically or economically significant effect on game sales. Crucially, the actual coefficient estimates are far out in the left tail of these placebo distributions (i.e., smaller than the corresponding 1th percentiles in Panels (a) and (b), respectively). These tabular and graphical results suggest that it is very unlikely that our baseline results shown in Table 4 are purely driven by chance.

To further reinforce that our findings are not coincidental, we next conduct a second placebo test by selecting pseudo-event years and re-estimate our regressions. In particular, we choose 2016 and 2017, years prior to SBI's founding, as the pseudo-event years, and reconduct our regression. In Panel B of Table 6, we find that the coefficients on *SBI*×*Pseduo Post* are statistically insignificant, further supporting robust causal interpretation of our baseline results and indicating they are less likely driven by chance.

[Insert Table 6 here]

[Insert Figure 5 here]

4.4. Robustness check

We next perform several robustness tests to ensure the robustness of our main findings. The results are presented in Table 7.

First, we perform a standard DID analysis using a binary treatment variable instead of a continuous one. In this specification, we replace SBI_i with $Treat_i$, defining treatment (control) games as those with an *SBI* score greater (less) than 3. $Treat_i$ is an indicator that equals to 1 for treatment games, and 0 otherwise. As shown in Panel A, our findings remain unchanged.

Second, we construct an alternative *SBI* score using a different prompt and rerun our analyses.[14] The results, also reported in Panel A, are qualitatively similar to our baseline

[14] The prompt we give is as follows:
"*Forget all previous instructions. As a video game expert, please determine whether a game is influenced by Sweet Baby Inc. based on the following criteria:*

Narrative-driven (story-focused)
Representation of cultural diversity
Reflection of social issues
Genre relevance (refer to previously collaborated genres)
Team collaboration history
Known list of collaborated games: [Dota Underlords | Alien: Rogue Incursion | Life is Strange: Double Exposure

findings, confirming that our results are not sensitive to the specific construction of the SBI measure.

Third, we repeat our analysis separately for the subsamples of developing and developed countries. Comparing the coefficients presented in Panel B, we find that while SBI's intervention has a statistically significant impact in both subsamples, the attenuating effect on sales is stronger for games in developing countries. As we show later, we attribute this finding to the possibility that consumers in developed countries are more receptive to DEI initiatives, while consumers in developing countries are less so.

Fourth, we assess the sensitivity of our results to the choice of the event window by testing alternative time periods: a nine-year window (four years pre- and post-intervention) and a seven-year window (three years pre- and post-intervention). Panel C presents these results, which show that the coefficient estimate for *SBI×Post* remains negative and statistically significant in all regressions, confirming our baseline results.

Taken together, we show that our main findings—the significant negative impact of the SBI intervention on game sales—remain robust across the above tests.

[Insert Table 7 here]

5. Further analyses

5.1. Channel analyses

In this section, we explore two plausible underlying economic channels through which SBI's intervention can affect game sales.

5.1.1 The effect of development costs

We begin by examining the *development costs channel*. That is, by involving in games' development to add DEI content, SBI makes game developers face high costs while they can

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| Lost Your Marbles | Neo Cab | Assassin's Creed Valhalla | Shadow Gambit: The Cursed Crew | Gotham Knights | Dungeons & Dragons: Dark Alliance | SPACE TOW TRUCK - ISAAC NEWTON's Favorite Puzzle Game | Dustborn | STREET UNI X | Psychroma | Forspoken | Homeworld 3 | Far Cry New Dawn | SILENT HILL | Old School RuneScape | Concord | Capes | FINAL FANTASY VII REBIRTH | Goodbye Volcano High | Hyper Light Breaker | Unknown 9: Awakening | Suicide Squad: Kill the Justice League | Sable | Battle Shapers | Tales of Kenzera™: ZAU | Kingdom Eighties | The Crew Motorfest | Flintlock: The Siege of Dawn]

You must remember to provide the answer directly, without including any thought process. Only output the final probability score (between 0 and 1), and do not include any analysis."

only allocate limited resources toward essential marketing and operations. Consequently, a trade-off between DEI and commercial investments becomes salient. We interpret such trade-off s as one that should prevail among games facing severe development financial constraints. To test this interpretation, we exploit a particularly kind of games, namely, the EA.

EA is a crowdfunding model within the gaming industry. Since developers often face budget constraints, they sell partial access by releasing an incomplete, yet playable, version of the game on Steam first, and then complete development once they've secured enough funding. This EA model does not imply a drop in game quality. In fact, several recent major titles have used the EA model; for example, the 2023 Game of the Year contender Baldur's Gate III adopted this model. We collect game EA information from Gamalytic. Utilizing the EA model as a classification criterion, we partition the sample into two groups to examine whether the impact of SBI's intervention on game sales differs between games with high development costs (EA games) and those with lower development costs (Non-EA games).

Panel A of Table 8 presents these subsample regression results. We find that the coefficient of the interaction term *SBI×Post* is significantly negative for EA games, suggesting that SBI's intervention has strong impact on EA games. While the effect is also statistically significant for non-EA games, the differential impact between EA and non-EA games is statistically significant, with one-sided *p*-values of 0.01 for *Ln(Units)* and 0.02 for *Ln(Sales)*, respectively.

This evidence suggests that games with higher development costs are more vulnerable to SBI's intervention and, as a result, experience greater losses in sales. Overall, these findings are consistent with our interpretation that development costs caused by DEI gangsters play an important role in attenuating game's sales performance.

[Insert Table 8 here]

5.1.2 The effect of players' DEI backlash

We next investigate the *players' DEI backlash channel*. That is, players could have a distaste for DEI. As such, SBI's intervention cause games contain more DEI-related elements, some player, more precise, the DEI unlike players could gain lower utility from consuming and playing these games. If so, when DEI-dispreferred players dominate the market. SBI's intervention could lead to less demand, and hence poor game sales. As a result, one would expect SBI's intervention to have stronger impact for games with lower DEI players.

Although we do not have a direct measure of players' preferences toward DEI, Gamalytic provides information on the regional distribution of players, which we use as a proxy to infer

regional DEI attitudes. Specifically, we collect data on the portion of players from each country and classify high-DEI countries based on the Equality Index obtained from https://www.equaldex.com. Countries with higher Equality Index scores are assumed to reflect greater societal support for DEI principles.

Gamalytic provides the portion of players belongs to which country from June 2024, in that case, we test this interpretation by partition the sample into two groups based on average value of the portion of DEI players spans from June 2024 to December 2024. We then examine whether the impact of SBI's intervention on game sales differs between games with higher DEI players and those with lower DEI players.

Panel B of Table 8 presents the regression results among games with different levels of DEI players. We find that the coefficient of the interaction term *SBI×Post* is significantly negative for games with low DEI players, whereas this effect is statistically insignificant for games with high DEI players. The differential impact between games with low DEI players and games with high DEI players is statistically significant, with one-sided *p*-values of 0.07 for *Ln(Units)* and 0.09 for *Ln(Sales)*, respectively. This finding indicates that games with low DEI players are more affected by the intervention of SBI and helps explain why the drop in sales after SBI's intervention.

5.2. Heterogeneity analyses

Our analysis thus far indicates that the *development cost channel* and *players' DEI backlash channel* jointly explain the decline in game sales following SBI's intervention. If these mechanisms are valid, the effect of SBI intervention is unlikely to be uniform across all games, because the differences in game design cause some games to be more sensitive than others, leading to heterogeneous effects.

In this subsection, we conduct sensitivity analysis to sharpen our understanding of DEI gangsters. Specifically, we posit that the DEI content imposed by SBI is the key driver of both channels. To test this hypothesis, we partition our sample into two subsamples based on a proxy for a game's amenability to DEI-related content modifications and then re-estimate our baseline model for each group. The results are detailed in Table 9.

[Insert Table 9 here]

We first analyze the Esport (Electronic Sports) games. Esports games are organized, competitive gaming conducted within a formalized framework, where professional players or

teams engage in structured contests governed by standardized rules. For example, Counter-Strike 2 and StarCraft II. Esports game prioritizes gameplay balance and mechanical skills above other elements, this competitive scaffolding inherently resists DEI elements. Therefore, this type of games creates a natural buffer against SBI's intervention. Panel A of Table 9 shows that the coefficient of the interaction term *SBI*×*Post* is only significantly negative among non-esports games, indicating that esport impede SBI's intervention.

We next analyze the story-based games. Since SBI is narrative development and consultation studio, it is intuitive to interpret that games with rich (poor) story are more (less) susceptible to influence of SBI. Panel B of Table 9 present the regression results. The coefficients of the interaction term *SBI*×*Post* and one-sided *p*-values reveal significant group differences. The evidence aligns with the notion that SBI' intervention has a stronger impact on games with rich story.

To explore how SBI' intervention affect game characters appears, we analyze the role of third person games, which are sensitive to SBI's intervention. Figure A2 illustrate an example of third person games. As shown, the game perspective is positioned behind the protagonist, allowing for clear observation of the character design as well as other characters in the game. As a result, modifications made by SBI to the character design are more easily to be observed by players and thus have a greater impact. Panel C of Table 9 present the regression results consistent with our interpretation. We observe a significantly negative coefficient of the interaction term *SBI*×*Post* among third person games, for non-third person games, the magnitude of the coefficient is relatively small.

[Insert Figure A2 here]

Finally, we explore the games featuring romance- and sex-related content. By introducing LGBTQ+ themes, SBI's intervention could result in content that make players feel jarring, forced, or even disgusting. For instance, players who prefer traditional or heteronormative relationship dynamics may react negatively to romance options that involve same-sex pairings or identity-driven narratives. In such cases, SBI-driven changes may provoke stronger player backlash, ultimately contributing to weaker sales performance for the affected titles. Panels D and E provide empirical support for this hypothesis. Particularly, games with romance- and sexual-related content experience a sharper decline in sales following SBI's intervention. This finding indicates that SBI's intervention, which often involves adding LGBTQ+-related content, has a substantial and long-lasting negative effect on game sales.

5.3. Country preference analyses

A country's level of DEI preference is an important factor influencing game sales following SBI's intervention. Intuitively, games developed in countries—or regions within countries—with lower DEI preferences are expected to encounter stronger negative attitudes toward DEI content. Marginal players in these localities may be dissatisfied with games featuring DEI elements, resulting in decreased demand.

To test this argument, we first conduct a within-country analysis by comparing red and blue states in the United States, where red states are those that predominantly vote the Republican and blue states are those that predominantly support Democrats. This sub-national comparison offers an advantageous setting to purge country-level confounding factors that might otherwise be difficult to control for.

Generally, blue states embrace and implement DEI initiatives. This is evident in policies mandating DEI training, inclusive curricula, and diversity considerations in public education, hiring practices, and state contracting, thereby reflecting higher societal preferences for DEI. By contrast, red states increasingly passed legislation to oppose or dismantle them, signaling a comparatively lower aggregate societal DEI preference. We classify games as being developed in red (blue) states if both the developer and publisher are located in red (blue) states. We expect the impact of SBI's intervention to be more pronounced among games developed in red states due to their populations' lower DEI preferences.

Table 10 presents the regression results. The coefficient of the interaction term $SBI \times Post$ is negatively and significant only for red states, but not for blue states. This finding indicates that young firms are more affected by SBI's intervention. This finding suggests that the adverse impact of SBI's intervention is concentrated in regions with lower acceptance of DEI content.

[Insert Table 10 here]

We also provide country-level evidence to complement our analysis beyond the United States. Specifically, we partition our sample into two groups based on each country's equality index, classifying countries with a high (low) index as high-DEI (low-DEI) countries. To further explore the potential positive effect of DEI content, we sub-divide the high-DEI group according to the stage of development of the country's game market.

While the addition of DEI content through SBI's intervention is generally associated with reduced game sales, it may also offer advantages under certain conditions. For instance, SBI's

intervention might help games from emerging game markets attract greater attention and thereby achieve improved sales though this remains an empirical question.

Table A2 presents the regression results. We find that the coefficient of the interaction term *SBI*×*Post* is significantly negative only among low-DEI countries, and insignificant for high-DEI countries, consistent with the pattern observed in Table 10. However, when focusing on high DEI country with emerging game market (column (3) and (6)), the coefficient on the interaction term *SBI*×*Post* becomes significantly positive at the 1% level. This result suggests that SBI's intervention can indeed have a positive impact on game sales in high-DEI countries with emerging game markets.

[Insert Table A2 here]

5.4. Anti-DEI event

To further examine SBI's intervention associated with DEI content, we explore an anti-DEI event as a plausible shock to DEI dynamics. The event we explore is the anti-DEI law. In 2024, a wave of anti-DEI legislation swept across multiple U.S. states, each passing laws within a tight timeframe. Specifically, Alabama, Iowa, Utah, Idaho, Indiana, and Kansas enacted sweeping legislation targeting DEI initiatives in public higher education.[15] Figure A4 provides a geographic overview of these treated states, detailing the specific months of passage and the effective dates for each law. These laws prohibit state-funded colleges and universities from operating DEI offices, offering DEI-specific programs or training, or requiring diversity statements during hiring or admissions processes, reflecting growing political backlash against DEI.

[Insert Figure A4 here]

Although the immediate impact of these laws targeted the public education sector, the event arguably served as a salient public signal that focused negative attention on DEI initiatives more broadly and raised awareness of anti-DEI concerns. One could therefore expect that games altered by SBI would subsequently display lower sales, as players' anti-DEI tendencies

[15] Utah led the movement, passing and signing its bill in January, with an effective date of July 1. Alabama followed in March, with its take effect on October 1. Idaho and Indiana also passed their respective laws in March, both taking effect on July 1. Iowa joined in April, and Kansas completed the trend in May, with both states' laws also becoming effective on July 1.

are higher, following the implementation of anti-DEI laws.

For this test, we employ a difference-in-difference-in-differences (DDD) regression to examine the impact of the anti-DEI law over the period from January 2015 to December 2024:

$$Sales_{i,t} = \alpha + \delta_t + \varphi_i + \beta_1 \times SBI_i \times Post_t \times ADL_{s,t} + \beta_2 \times SBI_i \times Post_t + \beta_3 \times ADL_{s,t} + \gamma \times Z_{i,t} + \varepsilon_{i,t},$$

where $Sales_{i,t}$ represents the number of game sale units or the number of game dollar sales (*Ln(Units)* and *Ln(Sales)*) for game *i* in month *t*. SBI_i is DeepSeek-assigned *SBI* score. $ADL_{s,t}$ is an indicator variable equal to 1 if state s implements the anti-DEI law, and 0 otherwise.[16] The coefficient of interest is β_1 for the triple interaction term $SBI_i \times Post_t \times ADL_{s,t}$, which is expected to be negative.

Table 11 presents the regression results. Columns (1) and (2) present the results based on the U.S. sample, while Columns (3) and (4) extant the sample to the global sample. Across all specifications, the coefficient estimate of β_1 is negative and significant at the 5% significance level, indicating that SBI's intervention leads to a stronger decline in sales after the implementation of anti-DEI laws. This is consistent with the channel of influence running from SBI's intervention to game sales.

[Insert Table 11 here]

5.5. Alternative explanations

Finally, one could cast doubt on our findings may be driven by reverse causality. That is games with poor quality may prefer to ask SBI's help for intervention to cater the demand of DEI players, and those games have poor sales even without SBI's intervention.

To address this concern, we exploit the within-treated variation in game quality by partitioning our sample into two groups using the critic score, manually acquired from https://www.metacritic.com. The critic score is released by game media outlets, which ranges between 1 and 100 and represents the quality of a given game, with a higher value indicating higher quality. We sort games equally into two groups based on their critic score and define the group with a high (low) critic score as the high (low) quality game group.

Table 12 reports the results. If the alternative explanation holds, we would expect the coefficient of the interaction term *SBI*×*Post* for high quality games to be significantly negative

[16] In an untabulated analysis, we repeat the test by replacing the law's implementation date with its enactment date and find that the results remain robust.

while the coefficient for the interaction term *SBI×Post* in low quality games would be insignificant. In contrast to this notion, we find that not only low quality games but also high quality games suffer sales losses from SBI's intervention. Specifically, the coefficients on *SBI×Post* are -0.178 (*t*-statistic = -2.66) for low-quality games and -0.154 (*t*-statistic = -1.80) for high-quality games, respectively, for *Ln(Sales)* reported in Columns (3) and (4). More importantly, the differential impact between high quality and low quality games is statistically insignificant, with one-sided p-values of 0.37 for Ln(*Units*) and 0.41 for Ln(*Sales*), respectively. These findings suggest that even for games with high quality, SBI's intervention exerts a significant effect on game sales, thus alleviating the reverse causality concern.

[Insert Table 12 here]

To reinforce our argument, we also explore the hobbyist game, which are indie games created by gaming enthusiasts, typically motivated by passion or advocacy rather than profit. Consequently, their intrinsic motivation renders them immune to SBI's coercive influence; however, they may voluntarily consult SBI to promote DEI values or enhance game visibility. Table A3 compare the different impact of SBI's intervention on hobbyist and non-hobbyist games. We observe that the coefficients of the interaction term *SBI×Post* is statistically insignificant in hobbyist games, mitigating concerns that the results are driven by low-quality games seeking SBI's services.

[Insert Table A3 here]

6. Conclusion

In this paper, we examine how DEI gangsters affect firm performance. Relying on a novel dataset from the video game industry around the world, we exploit SBI's intervention, which represents the presence of DEI gangsters, as an exogenous shock. We find that games with a high likelihood of SBI's intervention experience a significant decline in sales following the intervention, confirming that DEI gangster activity has a negative impact on firm performance. This effect is robust to a battery of robustness checks.

Furthermore, we explore the mechanisms driving this outcome. The negative sales impact is more pronounced for games with high development costs and for those with a large player base in countries exhibiting lower public support for DEI, consistent with the *development costs channel* and *players' DEI backlash channel*. Moreover, cross-country analyses reveal the

effect is particularly pronounced in U.S. states with conservative political majorities and, counterintuitively (red state), also in countries with a low support for DEI. We also find that the adoption of anti-DEI laws appears to amplify this negative impact.

Overall, our findings document the economic consequences of DEI gangster activity, thereby uncovering the potential dark side of ESG initiatives.

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Figure 1. Comparative analysis of DEI vs. non-DEI games

This figure presents the difference between DEI and non-DEI games.

(a)



The character appears less appealing in the modified version. The right side shows the SBI-altered design of the same character, and the left shows the original one. The image is sourced from Marvel's Spider-Man 1 & 2.

(b)



The character on the right side is redesigned as Black instead of White. The image is sourced from Dying Light 2.

(c)



Historical revisionism: Introducing a Black Japanese samurai character. This change drew public attention, including a comment by Elon Musk stating, "DEI is killing art." The image is sourced from Assassin's Creed Shadows.

(d)



Adding DEI elements to stories and plotlines. The image is sourced from Dragon Age: The Veilguard.

(e)



The game includes extensive DEI educational content. The image above demonstrates the proper way to address binary gender individuals. The image is sourced from Dragon Age: The Veilguard.

(f)



The game includes LGBTQ+ related romance content into the game. The image shows a male touching another male in an intimate way. The image is sourced from Warframe.

(g)



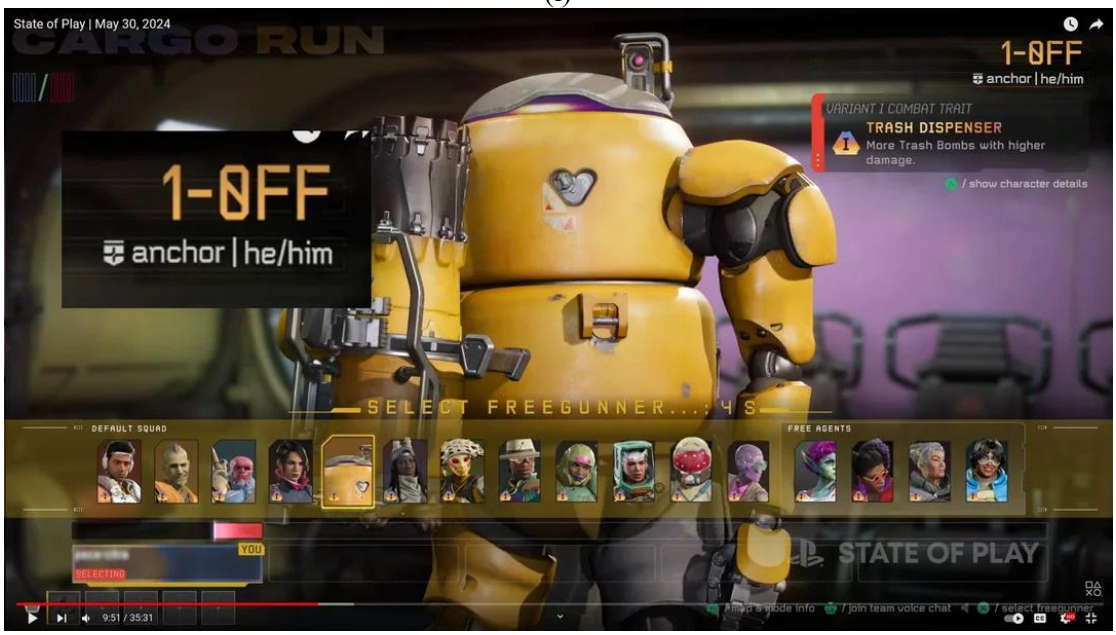
A transgender character is included into the game. The image is sourced from Apex.

(h)



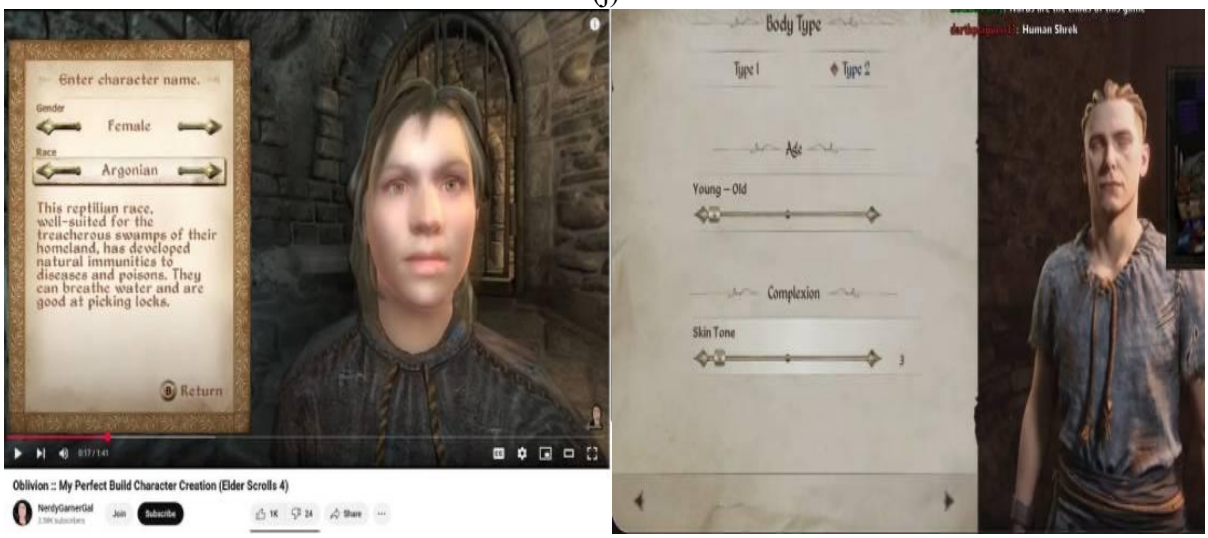
LGBTQ+-related sociopolitical issues, such as the rainbow flag is included in the game. The image is sourced from The Sims 4.

(i)



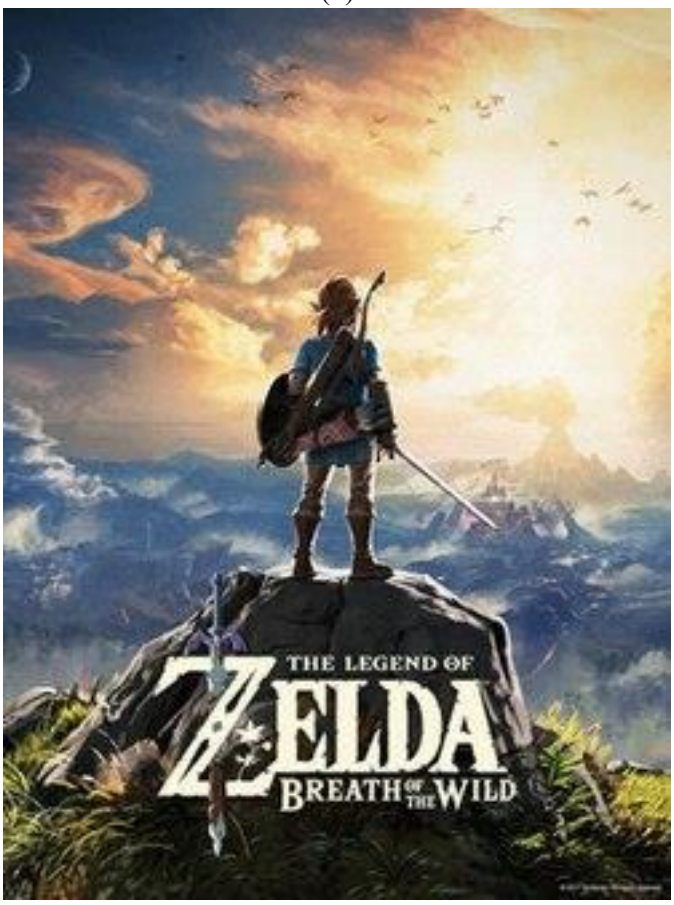
LGBTQ+-related content is introduced in some games by assigning gender identities to non-human entities, such as robots. For instance, the robot shown in the top-right corner is explicitly designated as he/him. The image is sourced from Concord.

(j)



Game customization has shifted from traditional gender selection, e.g., male and female, to broader classifications such as ‘Body Type.’ The image is sourced from Elder Scrolls 4.

(k)



Non-DEI games focus more on traditional entertainment gameplay and contain no DEI-related content. The image is sourced from The Legend of Zelda: Breath of the Wild.

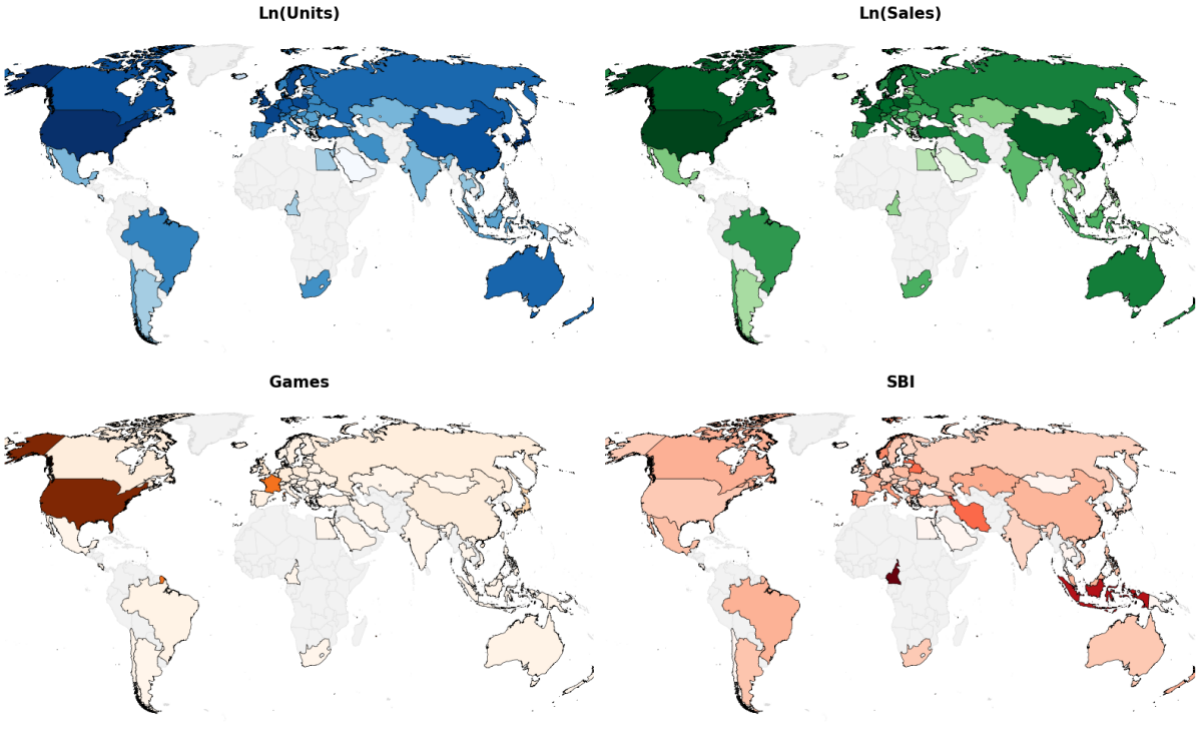
(l)



Prioritizes PvP and competitive gameplay. The image is sourced from Helldiver 2.

Figure 2. Geographic distribution of gaming industry metrics: Units, sales, games, and *SBI* scores by market

Panel A: headquarters location of developers. Darker shading indicates a higher sample mean for the respective measure



Panel B: headquarters location of publishers. Darker shading indicates a higher sample mean for the respective measure

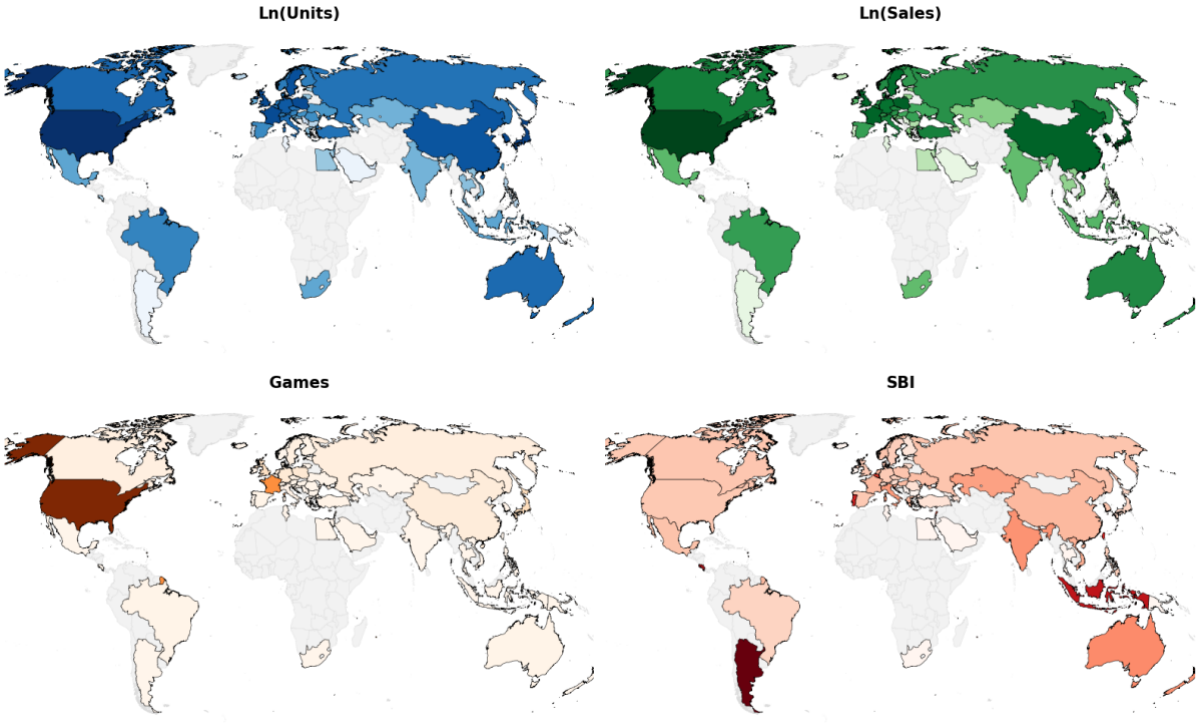


Figure 3. The trend of our *SBI* score

This figure plots the average *SBI* score from 2015 to 2024. The blue line represents the annual average of *SBI* score. The blue dashed vertical line marks the founding of SBI and the red dashed vertical line marks the beginning of its intensified intervention in the gaming industry in 2020. The green bars correspond to the number of games reportedly influenced by SBI each year.

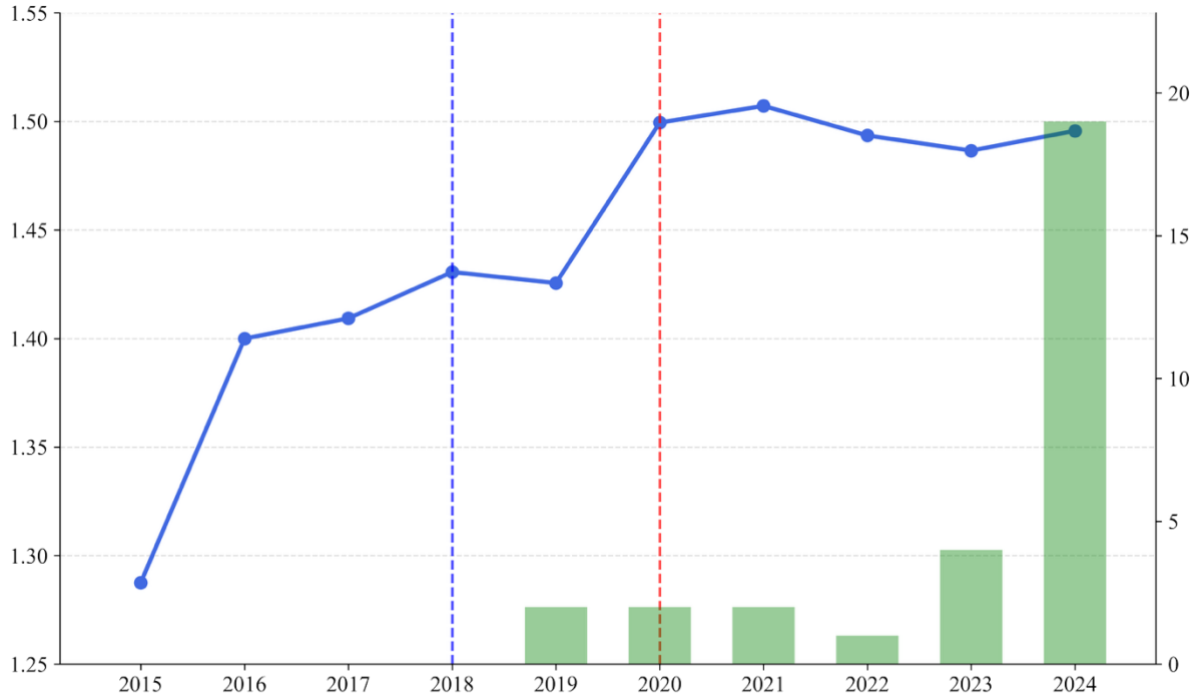
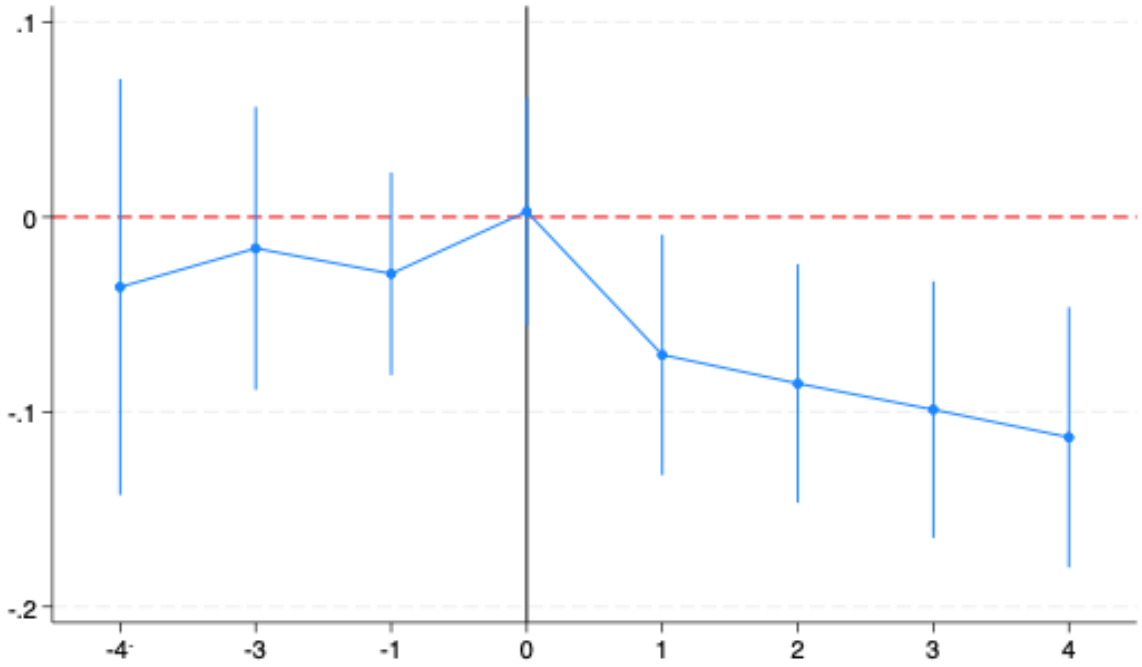


Figure 4. Dynamic effects

Panel A: The dynamic effect of SBI's intervention on the number of game sale units



Panel B: The dynamic effect of SBI's intervention on the number of game dollar sales

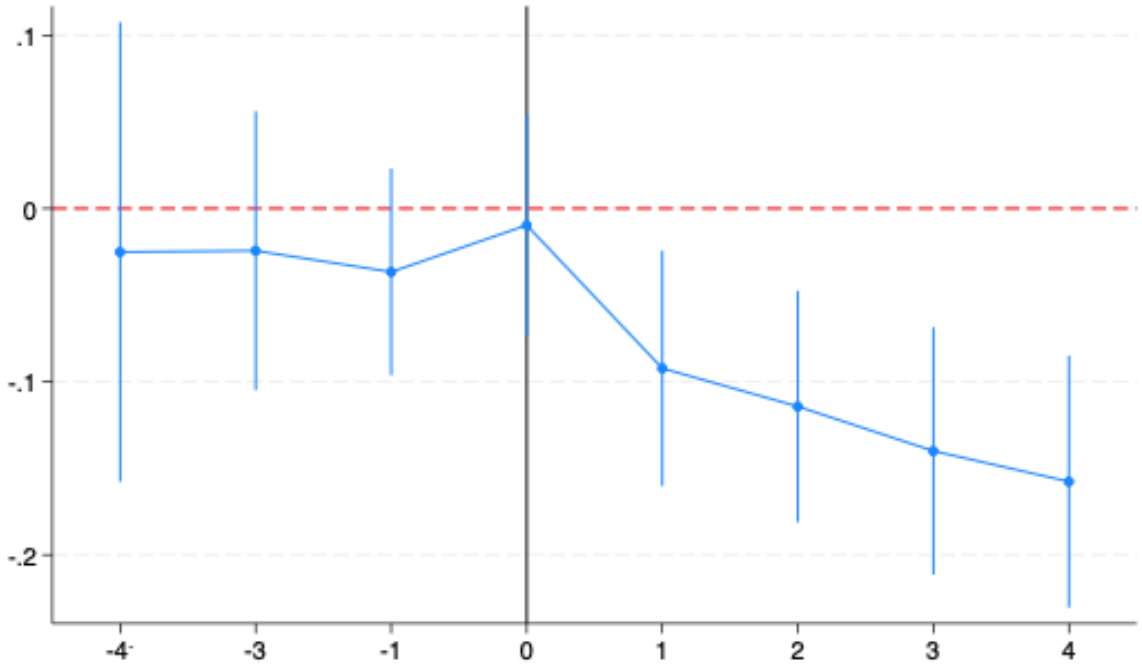


Figure 5. Pseudo treat effects

This figure presents the results of the pseudo treat effects for DID analysis, obtained by running simulations in which SBI scores are randomly assigned to games. In each simulation, we randomly assign pseudo SBI scores to games while preserving the original timing distribution. We then re-estimate our baseline DID regression model. This procedure is repeated 5,000 times. Histograms in Panels (a) and (c) ((b) and (d)) present the distribution of the coefficient estimates (*t*-statistics) from the randomly assigned *SBI*. Specifically: Panel (a) shows coefficient estimates where the dependent variable is *Ln(Units)*; Panel (b), the corresponding *t*-statistics; Panel (c) shows coefficient estimates where the dependent variable is *Ln(Sales)*; and Panel (d), the corresponding *t*-statistics. The red curves represent normal distributions with the same means and variances as those from the simulation results, providing a benchmark for comparison. The green dashed lines represent the actual coefficient estimates and the corresponding *t*-statistics.

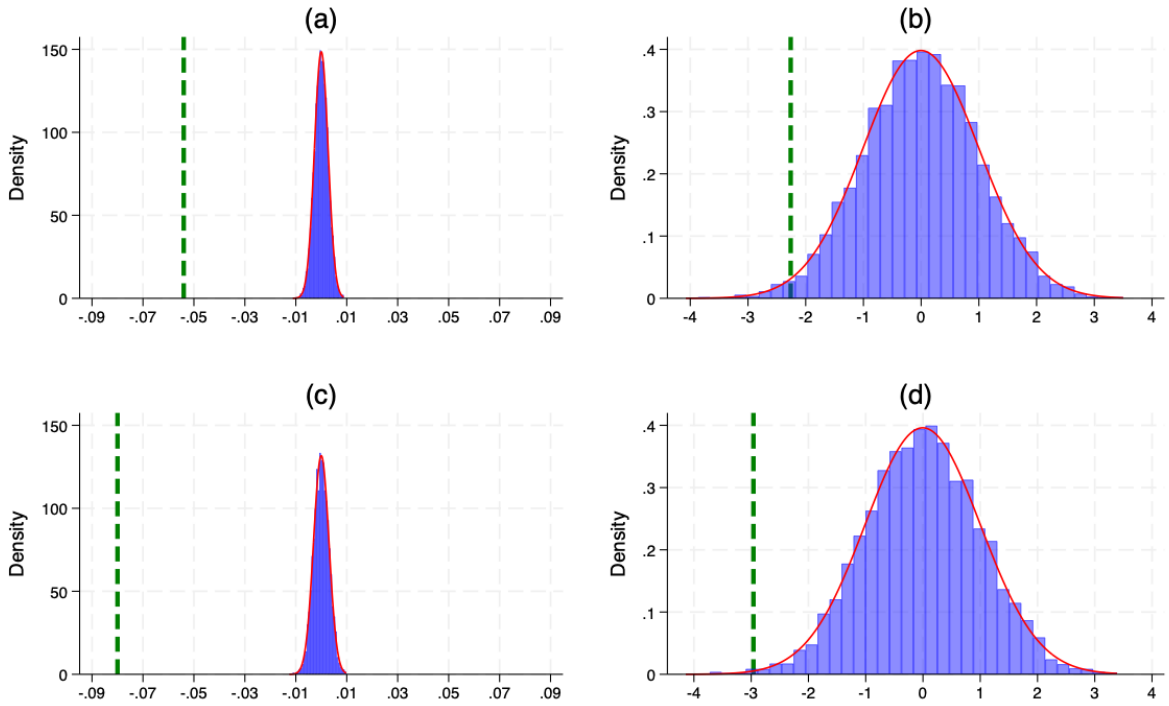


Table 1 Sample distribution

The sample consists of markets with games listed on Steam, compiled jointly by Gamalytic and SteamDB over the sample period from January 2015 to December 2024. In Panels A and B, *N* denotes the number of game-year-month observations. *Games* denotes the number of games within a market. *Ln(Units)* and *Ln(Sales)* are the logarithmic values of 1 plus the total number of game sale units and 1 plus the total dollar sales of games in a market, respectively. *SBI* and *Price* denote the average *SBI* score and the average game prices in a market, respectively. Panels A and B correspond to markets defined by the headquarters location of developers and publishers, respectively. In Panel C, *N* denotes the number of game-year-month observations. *Games* denotes the number of games within a specific game genre. *Ln(Units)* and *Ln(Sales)* are the logarithmic value of 1 plus the total number of game sale units and 1 plus the total game dollar sales within each genre, respectively. *SBI* and *Price* denote the average *SBI* score and the average game prices within each game genre, respectively.

Panel A: Sample distribution by market: headquarters location of developers

	(1)	(2)	(3)	(4)	(5)	(6)
	N	*Games*	*Ln(Units)*	*Ln(Sales)*	*SBI*	*Price*
Argentina	876	13	9.336	10.236	1.437	2.858
Armenia	127	2	9.460	10.837	2.370	8.170
Australia	3,353	55	16.389	18.701	1.409	12.380
Austria	583	13	14.234	17.085	1.405	16.319
Belarus	348	4	14.187	16.218	1.989	12.330
Belgium	993	18	15.729	18.887	1.940	14.930
Brazil	2,845	72	14.568	16.668	1.559	5.386
Bulgaria	98	6	12.744	16.207	1.837	12.214
Cameroon	105	1	9.336	11.595	3.000	13.529
Canada	11,568	217	17.924	20.937	1.568	15.510
Chile	317	4	12.627	14.806	1.000	14.998
Mainland China	9,320	234	17.660	21.006	1.535	8.187
Costa Rica	166	3	8.290	10.691	1.000	16.717
Croatia	909	13	13.853	16.776	1.000	19.946
Cyprus	2,071	39	14.590	17.349	1.361	8.235
Czech Republic	4,159	69	15.469	18.269	1.374	10.646
Denmark	1,755	28	16.374	18.892	1.240	9.863
Egypt	117	2	9.478	9.149	1.000	3.478
Estonia	50	1	9.866	12.905	1.000	26.720
Finland	3,763	59	16.149	18.553	1.320	10.108
France	94,550	2,022	18.466	20.916	1.490	9.306
Georgia	144	4	8.360	8.377	1.472	4.393
Germany	13,649	245	17.276	19.975	1.315	13.964
Greece	247	4	9.825	11.776	1.336	7.029
Hong Kong, China	102	1	7.997	10.315	2.000	12.997
Hungary	1,115	21	13.815	16.220	1.230	13.800
Iceland	119	1	7.682	9.030	1.000	14.467
India	480	10	11.326	14.060	1.325	8.423
Indonesia	301	10	12.517	14.807	2.651	9.959
Iran	88	1	13.845	16.099	2.000	18.727
Ireland	344	6	11.918	14.661	1.000	10.923
Israel	704	19	12.976	15.241	1.031	9.512
Italy	3,358	62	14.933	17.671	1.693	17.480
Japan	39,799	745	18.932	22.121	1.322	22.307

Kazakhstan	456	8	11.185	12.124	1.592	3.779
Latvia	31	1	7.582	9.658	2.000	13.171
Lebanon	19	2	3.932	5.100	2.105	3.908
Lithuania	1,091	22	16.490	18.160	1.168	9.746
Luxembourg	86	1	6.589	6.597	1.000	13.140
Malaysia	460	7	11.086	13.631	1.533	48.359
Malta	88	1	11.407	13.663	3.000	16.012
Mexico	548	12	11.022	12.460	1.478	29.145
Moldova	306	9	9.554	9.217	1.000	5.681
Mongolia	31	1	6.431	6.755	1.000	3.774
Netherlands	8,257	162	15.938	18.400	1.525	6.475
New Zealand	452	9	15.850	17.565	1.564	14.575
Norway	1,069	19	14.870	17.771	1.804	14.557
Papua New Guinea	33	1	3.611	3.584	1.000	1.635
Philippines	84	3	8.121	10.220	1.452	12.145
Poland	12,914	236	18.244	21.194	1.493	12.458
Portugal	478	12	11.207	13.279	1.900	7.150
Romania	2,310	38	12.440	14.227	1.388	3.814
Russia	11,145	208	16.229	18.436	1.353	7.163
Saudi Arabia	15	1	3.850	5.609	1.000	7.043
Serbia	491	7	12.347	15.084	1.637	7.042
Singapore	200	5	13.617	15.372	1.000	10.571
Slovenia	81	1	8.998	11.128	1.000	9.626
South Africa	465	9	13.708	14.867	1.404	6.933
South Korea	1,426	39	18.625	22.241	1.392	16.288
Spain	4,535	102	15.679	17.977	1.628	12.033
Sweden	7,215	121	18.478	21.193	1.406	15.562
Switzerland	2,341	51	14.959	16.845	1.237	8.478
Taiwan, China	160	5	12.411	15.094	1.606	21.032
Thailand	72	3	10.116	11.597	1.000	7.674
Turkey	4,421	81	15.710	18.905	1.359	6.821
Ukraine	3,347	58	14.385	16.398	1.480	8.618
United Kingdom	21,280	360	18.807	21.555	1.431	14.646
United States	169,508	3,405	19.722	22.311	1.399	9.626
Vietnam	246	5	9.552	11.381	1.407	7.667

Panel B: Sample distribution by market: headquarter location of publishers

	(1)	(2)	(3)	(4)	(5)	(6)
	N	*Games*	*Ln(Units)*	*Ln(Sales)*	*SBI*	*Price*
Argentina	62	1	3.611	5.720	3.000	16.335
Australia	2,852	49	16.188	18.197	1.790	12.024
Austria	1,292	24	14.524	17.431	1.272	13.664
Belgium	373	7	15.654	18.855	2.265	19.297
Brazil	2,017	47	14.512	16.633	1.333	5.417
Bulgaria	10	2	7.712	9.677	1.000	10.965
Canada	8,856	178	16.523	19.109	1.426	12.534
Mainland China	11,102	273	17.627	20.986	1.514	7.585
Costa Rica	8	2	8.993	11.915	2.750	22.021
Croatia	318	4	11.289	13.519	1.000	9.544

Cyprus	4,383	78	14.728	17.422	1.228	9.261
Czech Republic	4,524	81	15.546	18.347	1.345	8.131
Denmark	670	18	15.567	18.089	1.422	15.112
Egypt	113	1	9.475	9.121	1.000	3.336
Estonia	50	1	9.866	12.905	1.000	26.720
Finland	3,242	54	14.903	17.132	1.188	8.082
France	81,797	1,728	18.294	20.900	1.508	8.607
Georgia	6	1	3.497	4.754	1.000	4.573
Germany	19,110	342	17.327	19.967	1.393	12.869
Greece	352	5	10.220	12.016	1.534	6.824
Hong Kong, China	124	2	8.187	10.566	2.000	13.770
Hungary	834	16	13.575	15.891	1.478	11.526
Iceland	119	1	7.682	9.030	1.000	14.467
India	210	7	11.084	13.951	1.743	7.347
Indonesia	212	5	12.138	14.593	2.580	9.862
Ireland	206	4	11.737	14.567	1.000	10.057
Israel	579	11	12.816	15.110	1.010	9.724
Italy	5,015	85	16.321	18.989	1.698	17.305
Japan	30,975	615	18.988	22.170	1.316	24.644
Kazakhstan	410	7	11.179	12.123	1.659	4.090
Lebanon	19	2	3.932	5.100	2.105	3.908
Lithuania	268	8	9.633	11.808	1.280	8.012
Luxembourg	1,320	22	9.519	10.444	1.276	12.349
Malta	131	3	11.420	13.666	2.344	11.675
Mexico	524	8	12.147	14.374	1.447	9.877
Netherlands	9,822	186	15.315	17.499	1.539	7.831
New Zealand	287	5	15.822	17.490	1.746	12.641
Norway	806	14	15.085	18.020	1.444	19.288
Papua New Guinea	33	1	3.611	3.584	1.000	1.635
Philippines	72	2	8.081	10.196	1.361	13.260
Poland	17,964	356	18.295	21.145	1.437	10.696
Portugal	21	2	6.633	7.734	2.429	2.190
Romania	1,667	27	13.837	16.370	1.236	3.036
Russia	9,525	200	15.580	17.565	1.436	5.426
Saudi Arabia	15	1	3.850	5.609	1.000	7.043
Serbia	69	1	6.635	6.332	1.000	2.109
Singapore	10	1	2.773	3.555	1.000	2.390
Slovenia	1,008	43	12.017	13.868	1.596	7.425
South Africa	146	5	12.008	14.022	1.000	9.797
South Korea	1,426	38	18.617	22.227	1.450	20.005
Spain	2,361	52	14.088	16.550	1.407	11.682
Sweden	9,603	163	18.001	20.517	1.372	17.669
Switzerland	2,246	50	14.824	16.784	1.247	8.405
Taiwan, China	223	7	13.317	16.102	2.422	22.038
Thailand	72	3	10.116	11.597	1.000	7.674
Turkey	3,593	60	15.706	18.903	1.222	7.245
Ukraine	2,401	40	13.274	15.609	1.469	8.340
United Kingdom	29,743	546	18.420	20.929	1.399	12.868
United States	177,925	3,501	20.117	22.820	1.410	10.512

Vietnam	311	7	10.013	11.785	1.572	8.365
Azerbaijan	131	5	7.951	11.438	1.214	97.633
Tunisia	4	1	3.611	5.557	1.000	7.490
United Arab Emirates	17	1	6.346	6.786	1.000	6.637

Panel C: Sample distribution by game genre

	(1)	(2)	(3)	(4)	(5)	(6)
	N	*Games*	*Ln(Units)*	*Ln(Sales)*	*SBI*	*Price*
Action	218,313	4,192	20.657	23.682	1.343	13.164
Adventure	102,022	2,006	18.757	21.033	1.677	9.784
Casual	69,917	1,539	18.068	19.540	1.345	5.584
Role-playing	8,762	169	17.952	21.080	1.503	24.200
Racing	3,638	68	16.750	19.620	1.014	22.534
Simulation	10,521	218	17.610	20.724	1.272	15.924
Sports	1,008	18	13.573	15.401	1.121	12.610
Strategy	5,581	117	17.369	20.040	1.423	19.516
Other	35,652	718	17.904	20.120	1.480	9.224

Table 2. Summary statistics

This table presents summary statistics for the variables used in our main analysis, including the mean, median, standard deviation (Std), minimum (Min), 25th percentile (25%), 75th percentile (75%), and maximum (Max) values. The full panel sample consists of 455,691 game–year–month observations, spanning from January 2015 to December 2024. Detailed variable definitions are provided in Appendix A.

	N	Mean	Std	Min	25%	50%	75%	Max
SBI	455,691	1.428	0.802	1.000	1.000	1.000	2.000	5.000
Ln(Units)	455,691	2.950	3.115	0.000	0.000	2.485	5.170	16.457
Ln(Sales)	455,691	3.849	3.943	0.000	0.000	3.497	6.677	20.012
Price	455,691	11.360	15.170	0.000	2.390	6.990	14.990	1000.000
Ln(Players)	455,691	1.728	1.822	0.000	0.693	1.099	2.197	14.301
APT adj	455,691	0.413	1.958	-0.006	0.037	0.089	0.267	211.224
Followers (%)	455,691	0.025	0.845	-23.559	0.000	0.000	0.000	317.349
Top wish	455,691	0.002	0.042	0.000	0.000	0.000	0.000	1.000
Twitch	455,691	0.565	0.496	0.000	0.000	1.000	1.000	1.000

Table 3. Validation of our measure of SBI

This table presents validation tests of our measure of game exposure related to SBI. Panel A presents the relation between *SBI* and game characteristics. Panel B presents the relation between *SBI* and country-level DEI tendency. Control variables include *Price, Ln(Players), APT adj, Follower, Top wish,* and *Twitch*, all measured in the month the game is listed. Variable definitions are reported in Appendix A. *Equality index*^{dev} and *Equality index*^{pub} denote the equality indices for the developer's and publisher's countries, respectively. The *t*-statistics reported in parentheses are based in parentheses are based on standard errors. ***, **, and * indicate significance at the 1%, 5% and 10% levels, respectively.

Panel A: Game characteristics

	(1)	(2)	(3)	(4)	(5)
LGBTQ+	0.599***				0.413***
	(10.39)				(7.15)
Story Rich		0.383***			0.325***
		(18.52)			(15.39)
PvP			-0.307***		-0.242***
			(-9.68)		(-7.77)
Female				0.291***	0.151***
				(10.79)	(5.49)
N	8,984	8,984	8,984	8,984	8,984
R-sq	0.051	0.076	0.050	0.052	0.093
Control	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes
Developer Country FE	Yes	Yes	Yes	Yes	Yes
Publisher Country FE	Yes	Yes	Yes	Yes	Yes

Panel B: Country-level DEI tendencies

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Equality index^{dev}	0.159**						0.180*
	(2.01)						(1.69)
Legal index^{dev}		0.092					
		(1.64)					
Public index^{dev}			0.235**				
			(2.25)				
Equality index^{pub}				0.197**			0.302**
				(2.37)			(2.55)
Legal index^{pub}					0.120**		
					(2.09)		
Public index^{pub}						0.239**	
						(2.15)	
N	9,009	9,009	9,008	9,010	9,010	9,009	4,443
R-sq	0.019	0.019	0.019	0.019	0.019	0.019	0.037
Control	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 4. Main results

This table presents the results of the DID analysis with continuous treatment designed for investigating SBI's intervention on game sales. Variable definitions are reported in Appendix A. All regressions include game and year-month fixed effects. The *t*-statistics reported in parentheses are based on standard errors double clustered at both game and year-month levels. ***, **, and * indicate significance at the 1%, 5% and 10% levels, respectively.

	(1)	(2)	(3)	(4)
	Ln(Units)		*Ln(Sales)*	
SBI×Post	**-0.070*** **	**-0.054** **	**-0.095*** **	**-0.080*** **
	(-2.74)	**(-2.26)**	**(-3.33)**	**(-2.96)**
Price		0.001		0.007***
		(0.77)		(4.28)
Ln(Players)		0.804***		0.792***
		(32.40)		(31.87)
APT adj		-0.033***		-0.024**
		(-3.57)		(-2.04)
Followers		0.000*		0.000*
		(1.97)		(1.94)
Top wish		1.545***		1.629***
		(12.97)		(12.91)
Twitch		-0.336***		-0.278***
		(-7.19)		(-5.44)
N	455,691	455,691	455,691	455,691
R-sq	0.698	0.718	0.765	0.777
Control	Yes	Yes	Yes	Yes
Game FE	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes
Game & Time Cluster	Yes	Yes	Yes	Yes

Table 5. Dynamic effects

This table presents the results of the dynamic DID analysis with continuous treatment designed for examining parallel-trends assumption. Variable definitions are reported in Appendix A. All regressions include game and year-month fixed effects. The *t*-statistics reported in parentheses are based on standard errors double clustered at both game and year-month levels. ***, **, and * indicate significance at the 1%, 5% and 10% levels, respectively.

	(1)	(2)
	Ln(Units)	*Ln(Sales)*
SBI×−4⁻	-0.036	-0.025
	(-0.67)	(-0.38)
SBI×−3	-0.016	-0.024
	(-0.44)	(-0.60)
SBI×−1	-0.029	-0.037
	(-1.11)	(-1.21)
SBI×0	0.003	-0.010
	(0.09)	(-0.30)
SBI×1	**-0.071****	**-0.092*****
	(-2.27)	**(-2.69)**
SBI×2	**-0.085*****	**-0.114*****
	(-2.76)	**(-3.39)**
SBI×3	**-0.099*****	**-0.140*****
	(-2.97)	**(-3.88)**
SBI×4	**-0.113*****	**-0.158*****
	(-3.35)	**(-4.29)**
N	455,691	455,691
R-sq	0.718	0.777
Control	Yes	Yes
Game FE	Yes	Yes
Time FE	Yes	Yes
Game & Time Cluster	Yes	Yes

Table 6. Pseudo effects

This table presents the results of the pseudo tests for DID analysis. Panel A presents the pseudo treatment effects, obtained by running simulations in which SBI scores are randomly assigned to games. In each simulation, we randomly assign pseudo SBI scores to games while preserving the original timing distribution. We then re-estimate our baseline DID regression model. This procedure is repeated 5,000 times. We summarize the distributions of the coefficients and corresponding *t*-statistics for the variable of interest, *SBI×Post*. Panel B presents the pseudo time effects, in which the treatment is artificially assumed to occur in 2016 and 2017, respectively. The baseline DID model is re-estimated using these pseudo treatment periods. Specifically, *Pseudo Post1* is an indicator equal to 1 if the year is 2016 or after, and 0 otherwise; *Pseudo Post2* is an indicator equal to 1 if the year is 2017 or after, and 0 otherwise. Variable definitions are reported in Appendix A. All regressions include game and year-month fixed effects. The *t*-statistics reported in parentheses are based in parentheses are based on standard errors double clustered at both game and year-month levels. ***, **, and * indicate significance at the 1%, 5% and 10% levels, respectively.

Panel A: Pseudo treatment effect

	Actual	Mean	P5	P25	Median	P75	P95
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Ln(Units)	**-0.054**	-0.000	-0.004	-0.002	-0.000	0.002	0.004
	(-2.26)	(-0.00)	(-1.63)	(-0.68)	(-0.00)	(0.68)	(1.66)
Ln(Sales)	**-0.080**	-0.000	-0.005	-0.002	-0.000	0.002	0.005
	(-2.96)	(-0.00)	(-1.65)	(-0.68)	(-0.01)	(0.69)	(1.64)

Panel B: Pseudo time effect

	(1)	(2)	(3)	(4)
	Ln(Units)	*Ln(Sales)*	*Ln(Units)*	*Ln(Sales)*
SBI×Pseudo Post1	**0.126**	**0.130**		
(Year >= 2016)	**(1.33)**	**(1.01)**		
SBI×Pseudo Post2			**-0.015**	**-0.047**
(Year >= 2017)			**(-0.30)**	**(-0.70)**
N	455,691	455,691	455,691	455,691
R-sq	0.718	0.777	0.718	0.777
Control	Yes	Yes	Yes	Yes
Game FE	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes
Game & Time Cluster	Yes	Yes	Yes	Yes

Table 7. Robustness checks

This table presents the results of several robustness tests. Panel A presents the results of DID analysis with alternative treat measures. Panel B presents the results in alternative country samples. Panel C presents the results in alternative period samples. Variable definitions are reported in Appendix A. All regressions include game and year-month fixed effects. The *t*-statistics reported in parentheses are based in parentheses are based on standard errors double clustered at both game and year-month levels. ***, **, and * indicate significance at the 1%, 5% and 10% levels, respectively.

Panel A: Alternative treat measures

	(1)	(2)	(3)	(4)
	Replace SBI with Treat		SBI via alternative prompt	
	Ln(Units)	*Ln(Sales)*	*Ln(Units)*	*Ln(Sales)*
SBI×Post	**-0.135****	**-0.185*****	**-0.286***	**-0.324****
	(-2.34)	**(-2.85)**	**(-1.93)**	**(-2.00)**
N	455,691	455,691	455,691	455,691
R-sq	0.718	0.777	0.718	0.777
Control	Yes	Yes	Yes	Yes
Game FE	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes
Game & Time Cluster	Yes	Yes	Yes	Yes

Panel B: Alternative country sample

	(1)	(2)	(3)	(4)
	Developing Country		Developed Country	
	Ln(Units)	*Ln(Sales)*	*Ln(Units)*	*Ln(Sales)*
SBI×Post	**-0.118****	**-0.122****	**-0.035**	**-0.067****
	(-2.52)	**(-2.26)**	**(-1.31)**	**(-2.23)**
N	87,528	87,528	368,163	368,163
R-sq	0.703	0.770	0.722	0.779
Control	Yes	Yes	Yes	Yes
Game FE	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes
Game & Time Cluster	Yes	Yes	Yes	Yes

Panel C: Alternative period sample

	(1)	(2)	(3)	(4)
	-4~4years		-3~3years	
	Ln(Units)	*Ln(Sales)*	*Ln(Units)*	*Ln(Sales)*
SBI×Post	**-0.050****	**-0.075*****	**-0.044****	**-0.063****
	(-2.20)	**(-2.88)**	**(-2.03)**	**(-2.55)**
N	356,706	356,706	270,689	270,689
R-sq	0.702	0.763	0.681	0.741
Control	Yes	Yes	Yes	Yes
Game FE	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes
Game & Time Cluster	Yes	Yes	Yes	Yes

Table 8. Channel analyses

This table presents the tests for the economic channels through which SBI's intervention affects game sales. Panel A presents the results of the DID analysis designed to examine the role of game development costs. EA denotes Early Access games—unfinished titles sold to players prior to official release in order to raise development funding. Panel B presents the DID analysis designed to examine the impact of players' DEI tendencies on game sales. Variable definitions are reported in Appendix A. All regressions include game and year-month fixed effects. The *t*-statistics reported in parentheses are based on standard errors double clustered at both game and year-month levels. ***, **, and * indicate significance at the 1%, 5% and 10% levels, respectively.

Panel A: The effect of game development costs

	(1)	(2)	(3)	(4)
	Ln(Units)		*Ln(Sales)*	
	Non-EA	EA	Non-EA	EA
	Low	High	Low	High
SBI×Post	**-0.050****	**-0.370*****	**-0.076*****	**-0.424****
	(-2.07)	**(-2.81)**	**(-2.77)**	**(-2.60)**
P: High < Low	**[0.01]**		**[0.02]**	
N	442,620	12,130	442,620	12,130
R-sq	0.715	0.785	0.776	0.809
Control	Yes	Yes	Yes	Yes
Game FE	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes
Game & Time Cluster	Yes	Yes	Yes	Yes

Panel B: The effect of players' anti-DEI tendencies

	(1)	(2)	(3)	(4)
	Ln(Units)		*Ln(Sales)*	
	Low DEI Players	High DEI Players	Low DEI Players	High DEI Players
SBI×Post	**-0.220****	**-0.014**	**-0.208****	**-0.039**
	(-2.34)	**(-0.14)**	**(-2.30)**	**(-0.43)**
P: High > Low	**[0.07]**		**[0.09]**	
N	12,509	10,796	12,509	10,796
R-sq	0.679	0.594	0.781	0.688
Control	Yes	Yes	Yes	Yes
Game FE	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes
Game & Time Cluster	Yes	Yes	Yes	Yes

Table 9. Heterogeneity analyses

This table presents the results of sensitivity analysis of the effect of SBI's intervention on game sales. Specifically, the analysis is conducted by dividing the sample into two subsamples based on a partitioning variable. Variable definitions are reported in Appendix A. All regressions include game and year-month fixed effects. The *t*-statistics reported in parentheses are based on standard errors double clustered at both game and year-month levels. ***, **, and * indicate significance at the 1%, 5% and 10% levels, respectively.

Panel A: Esports games

	(1)	(2)	(3)	(4)
	Ln(Units)		*Ln(Sales)*	
	Esports Hard	Non-esports Easy	Esports Hard	Non-esports Easy
SBI×Post	**0.184**	**-0.053****	**0.215**	**-0.080*****
	(1.16)	**(-2.20)**	**(1.37)**	**(-2.93)**
P: Hard > Easy	**[0.07]**		**[0.03]**	
N	4,064	451,627	4,064	451,627
R-sq	0.764	0.717	0.818	0.777
Control	Yes	Yes	Yes	Yes
Game FE	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes
Game & Time Cluster	Yes	Yes	Yes	Yes

Panel B: Story-based games

	(1)	(2)	(3)	(4)
	Ln(Units)		*Ln(Sales)*	
	Poor Story Hard	Rich Story Easy	Poor Story Hard	Rich Story Easy
SBI×Post	**-0.057***	**-0.154*****	**-0.064***	**-0.197*****
	(-1.92)	**(-3.24)**	**(-1.95)**	**(-3.74)**
P: Hard > Easy	**[0.04]**		**[0.02]**	
N	355,307	100,384	355,307	100,384
R-sq	0.699	0.728	0.757	0.785
Control	Yes	Yes	Yes	Yes
Game FE	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes
Game & Time Cluster	Yes	Yes	Yes	Yes

Panel C: Third person games

	(1)	(2)	(3)	(4)
	Ln(Units)		*Ln(Sales)*	
	Non-Third Person Hard	Third Person Easy	Non-Third Person Hard	Third Person Easy
SBI×Post	**-0.047***	**-0.175****	**-0.074*****	**-0.193****
	(-1.92)	**(-2.16)**	**(-2.65)**	**(-2.05)**
P: Hard > Easy	**[0.07]**		**[0.11]**	
N	413,106	42,585	413,106	42,585
R-sq	0.697	0.805	0.758	0.855
Control	Yes	Yes	Yes	Yes
Game FE	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes
Game & Time Cluster	Yes	Yes	Yes	Yes

Panel D: Romance-related games

	(1)	(2)	(3)	(4)
	Ln(Units)		*Ln(Sales)*	
	Non-Romance Hard	Romance Easy	Non-Romance Hard	Romance Easy
SBI×Post	**-0.049****	**-0.241****	**-0.073****	**-0.321****
	(-2.01)	**(-2.02)**	**(-2.61)**	**(-2.37)**
P: Hard > Easy	**[0.06]**		**[0.04]**	
N	444,219	11,472	444,219	11,472
R-sq	0.717	0.727	0.778	0.755
Control	Yes	Yes	Yes	Yes
Game FE	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes
Game & Time Cluster	Yes	Yes	Yes	Yes

Panel E: Sex-related games

	(1)	(2)	(3)	(4)
	Ln(Units)		*Ln(Sales)*	
	Non-Sexual Hard	Sexual Easy	Non-Sexual Hard	Sexual Easy
SBI×Post	**-0.042***	**-0.177****	**-0.069****	**-0.176****
	(-1.66)	**(-2.50)**	**(-2.39)**	**(-2.47)**
P: Hard > Easy	**[0.04]**		**[0.08]**	
N	426,208	29,483	426,208	29,483
R-sq	0.716	0.718	0.775	0.796
Control	Yes	Yes	Yes	Yes
Game FE	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes
Game & Time Cluster	Yes	Yes	Yes	Yes

Table 10. US analysis: Red states vs Blue states

This table presents the results of the DID analysis designed to examine the differential impact of SBI's intervention on game sales between red and blue states within the US sample. Variable definitions are reported in Appendix A. All regressions include game and year-month fixed effects. The *t*-statistics reported in parentheses are based on standard errors double clustered at both game and year-month levels. ***, **, and * indicate significance at the 1%, 5% and 10% levels, respectively.

	(1)	(2)	(3)	(4)
	Ln(Units)		*Ln(Sales)*	
	Red States	Blue States	Red States	Blue States
SBI×Post	**-0.283*** **	**-0.045**	**-0.555*** **	**-0.089**
	(-2.94)	**(-0.37)**	**(-4.30)**	**(-0.68)**
P: Red < Blue	**[0.06]**		**[0.01]**	
N	12,141	19,019	12,141	19,019
R-sq	0.603	0.793	0.665	0.839
Control	Yes	Yes	Yes	Yes
Game FE	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes
Game & Time Cluster	Yes	Yes	Yes	Yes

Table 11. Anti-DEI law

This table presents the effect of anti-DEI law on the relation between *SBI* and game sales using the following panel regression:

$$Sales_{i,t} = \alpha + \delta_t + \varphi_i + \beta_1 \times SBI_i \times Post_t \times ADL_{s,t} + \beta_2 \times SBI_i \times Post_t + \beta_3 \times ADL_{s,t} + \gamma \times Z_{i,t} + \varepsilon_{i,t},$$

where $Sales_{i,t}$ represents the number of game sale units and the number of game dollar sales (*Ln(Units)* and *Ln(Sales)*) for game *i* in month *t*. SBI_i is DeepSeek-assigned score that quantifies the intensity of a game's influence by SBI. $ADL_{s,t}$ is an indicator variable equal to 1 if state *s* implements the anti-DEI law, and 0 otherwise. Columns (1) and (2) present the results based on the U.S. sample, while Columns (3) and (4) present the results from the Global sample. Variable definitions are reported in Appendix A. All regressions include game and year-month fixed effects. The *t*-statistics reported in parentheses are based on standard errors double clustered at both game and year-month levels. ***, **, and * indicate significance at the 1%, 5% and 10% levels, respectively.

	(1)	(2)	(3)	(4)
	U.S. sample		Global sample	
	Ln(Units)	*Ln(Sales)*	*Ln(Units)*	*Ln(Sales)*
SBI×Post×ADL	**-0.343****	**-0.733****	**-0.350*****	**-0.728****
	(-2.56)	**(-2.25)**	**(-2.94)**	**(-2.31)**
SBI×Post	-0.089	-0.117*	-0.054**	-0.080***
	(-1.40)	(-1.67)	(-2.26)	(-2.95)
ADL	0.296	0.599	0.226	0.453
	(1.18)	(1.07)	(0.97)	(0.84)
N	60,588	60,588	455,691	455,691
R-sq	0.739	0.790	0.718	0.777
Control	Yes	Yes	Yes	Yes
Game FE	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes
Game & Time Cluster	Yes	Yes	Yes	Yes

Table 12. Game quality and sales

This table presents the results of the DID analysis designed to examine whether the impact of SBI's intervention on game sales is associated with game quality. Specifically, the analysis is conducted by dividing the sample into two subsamples based on the critic score, as released by media outlets, which serves as a measure of game quality. Variable definitions are reported in Appendix A. All regressions include game and year-month fixed effects. The *t*-statistics reported in parentheses are based on standard errors double clustered at both game and year-month levels. ***, **, and * indicate significance at the 1%, 5% and 10% levels, respectively.

	(1)	(2)	(3)	(4)
	Ln(Units)		*Ln(Sales)*	
	Low Quality	High Quality	Low Quality	High Quality
SBI×Post	**-0.134****	**-0.104**	**-0.178*****	**-0.154***
	(-2.36)	**(-1.51)**	**(-2.66)**	**(-1.80)**
P: Low < High	**[0.37]**		**[0.41]**	
N	57493	51986	57493	51986
R-sq	0.651	0.765	0.675	0.795
Control	Yes	Yes	Yes	Yes
Game FE	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes
Game & Time Cluster	Yes	Yes	Yes	Yes

Appendix

Figure A1. More example of DEI-related elements in video games

(a)



The character designs feature unconventional appearances, including homosexual, transgender, and diverse roles. The top-left character is female, the top-right is a homosexual male, and the bottom-right is a transgender woman. The image is sourced from Concord.

(b)



Historical revisionism: Character modifications include the introduction of minority ethnicities, such as individuals of African descent, resulting in portrayals that are inconsistent with the historical or mythological setting. For example, the figure on the left depicts Angrboða, while the figure on the right shows Thor. Angrboða is traditionally depicted as a member of the giants within Norse mythology, often visualized with fair skin, yet here she is reimagined as Black. Similarly, Thor is typically characterized as a powerful, muscular warrior; however, his design in this context depicts him as significantly overweight. The image is sourced from God of War: Ragnarök.

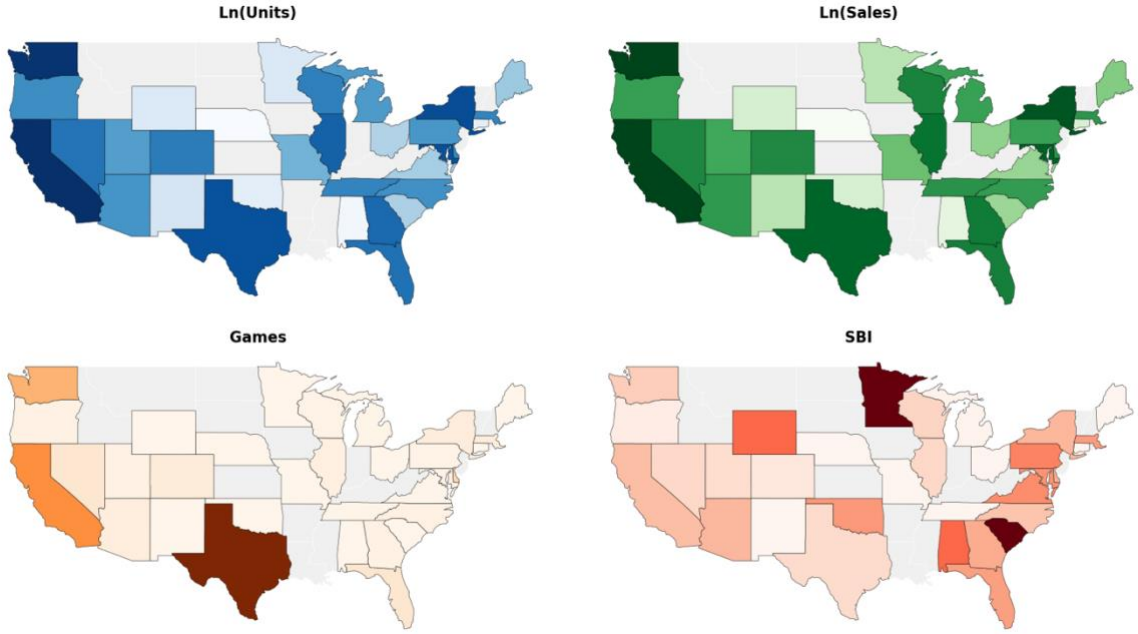
Figure A2. Third-person games



This figure illustrates an example of a third-person game. The third-person perspective—positioned behind the protagonist—offers a clear view of the character's appearance as well as other in-game figures. Consequently, SBI's interventions related to character design are likely to have a greater impact in this context. The image is sourced from Dragon Age: The Veilguard.

Figure A3. U.S. geographic distribution of gaming industry metrics: Units, sales, games, and *SBI* scores by market

Panel A: Developer headquarters by state. Darker shading indicates a higher sample mean for the respective measure



Panel B: Publisher headquarters by state. Darker shading indicates a higher sample mean for the respective measure

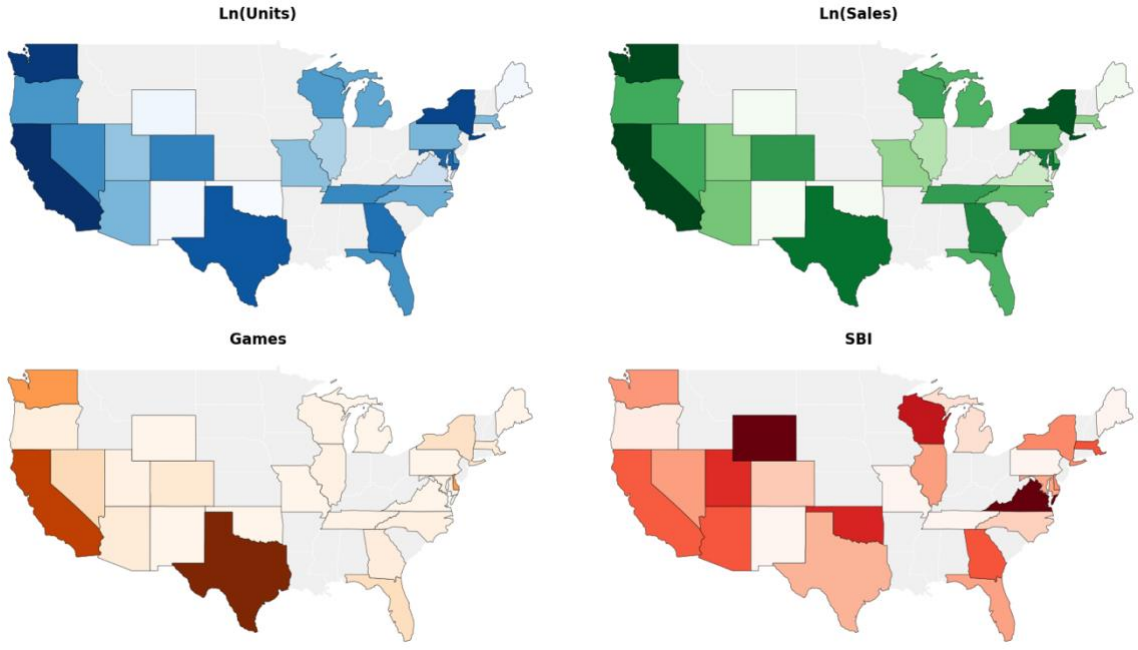


Figure A4. Treated U.S. states with anti-DEI laws and date of passage

This map identifies the treated states (highlighted in red) that passed and enacted anti-DEI laws during the 2024. Annotations specify the month of legislative passage and the corresponding effective date for each state.

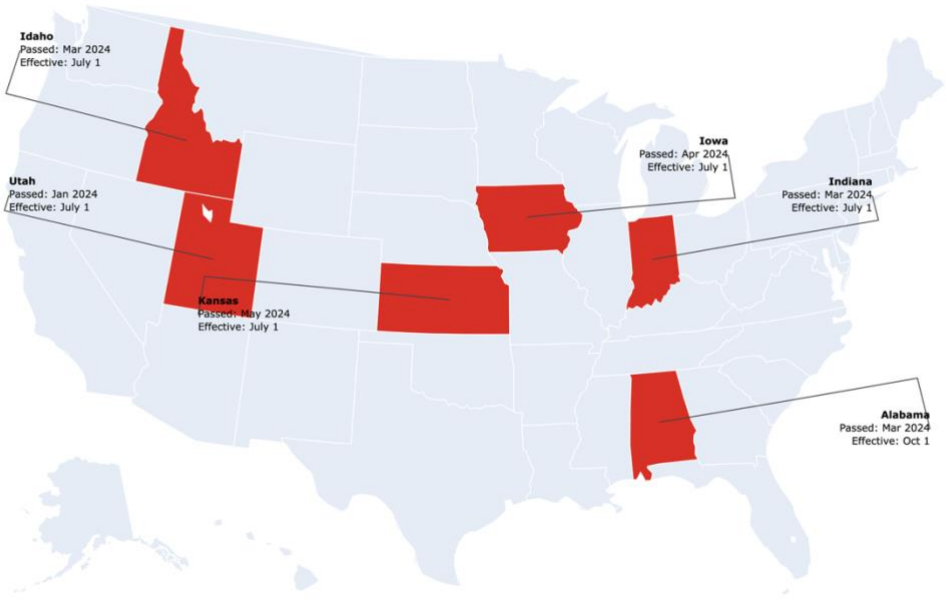


Table A1. Variable definitions

This table reports the definitions of main variables.

Variables	Definitions
SBI	The DeepSeek-assign score, which ranges from 1 to 5, quantifies the intensity of a game's influence by SBI.
Post	A dummy variable taking the value of 1 if year is after 2020, 0 otherwise.
Ln(Units)	The logarithmic value of 1 plus the number of game sale units.
Ln(Sales)	The logarithmic value of 1 plus game dollar sales.
Price	The price of the game.
Ln(Players)	The logarithmic value of 1 plus the number of players.
APT adj	The time-adjusted average playing time, calculated as the ratio of average playing time to the number of months the game has been listed.
Followers	The increase in number of followers.
Top wish	A dummy variable taking the value of 1 if the game ranks within the top 100 on the Wishlist, 0 otherwise.
Twitch	A dummy variable taking the value of 1 if the game appears on Twitch, 0 otherwise.

Table A2. Cross-country analysis

This table presents the results of the DID analysis designed to examine the differential impact of SBI's intervention on game sales across countries with varying DEI tendencies. Low DEI Country presents countries with low DEI tendency. High DEI Country (DGM) refers to countries with high DEI tendency and with developed game markets, and High DEI Country (EGM) refers to countries with high DEI tendency and with emerging game markets. Variable definitions are reported in Appendix A. All regressions include game and year-month fixed effects. The *t*-statistics reported in parentheses are based on standard errors double clustered at both game and year-month levels. ***, **, and * indicate significance at the 1%, 5% and 10% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
		Ln(Units)			*Ln(Sales)*	
	Low DEI Country	High DEI Country (DGM)	High DEI Country (EGM)	Low DEI Country	High DEI Country (DGM)	High DEI Country (EGM)
SBI×Post	**-0.097****	**-0.038**	**0.502*****	**-0.099***	**-0.072****	**0.606*****
	(-2.07)	**(-1.40)**	**(3.10)**	**(-1.77)**	**(-2.43)**	**(3.39)**
N	121,019	334,672	4,109	121,019	334,672	4,109
R-sq	0.737	0.708	0.670	0.803	0.764	0.708
Control	Yes	Yes	Yes	Yes	Yes	Yes
Game FE	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Game & Time Cluster	Yes	Yes	Yes	Yes	Yes	Yes

Table A3. Hobbyist game

This table reports DID analysis results comparing the impact of SBI's intervention on game sales for hobbyist versus non-hobbyist-developed games. Variable definitions are reported in Appendix A. All regressions include game and year-month fixed effects. The *t*-statistics reported in parentheses are based on standard errors double clustered at both game and year-month levels. ***, **, and * indicate significance at the 1%, 5% and 10% levels, respectively.

	(1)	(2)	(3)	(4)
	Ln(Units)		*Ln(Sales)*	
	Hobbyist	Non-Hobbyist	Hobbyist	Non-Hobbyist
SBI×Post	**0.023**	**-0.056****	**0.026**	**-0.087*****
	(0.47)	**(-2.15)**	**(0.49)**	**(-2.93)**
P: N < H	**[0.08]**		**[0.03]**	
N	57,321	398,370	57,321	398,370
R-sq	0.349	0.714	0.360	0.773
Control	Yes	Yes	Yes	Yes
Game FE	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes
Game & Time Cluster	Yes	Yes	Yes	Yes