THE IMPACT OF A PUBLIC VOUCHER FOR THE ARTS: EVIDENCE FROM THE ITALIAN 18APP

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Abstract

We provide novel evidence on the impact of a public voucher scheme for cultural consumption. The voucher was introduced in Italy in 2016 for citizens aged 18 year old. We use repeated cross-sections from the annual household survey 'Aspects of Daily Life' for the period 2013-2019 and combine Entropy Balancing with Difference-in-Difference estimation to assess the voucher causal effect on cultural consumption. We find a significant impact of the cultural voucher in fostering participation in cinema, non-classic concerts and reading books and online/e-books, with the effect driven by lower SES individuals. Overall, estimated effects suggest a less-than-total crowding out of public resources. The voucher also generated some spillover effects at the household level, and, in the case of cinema, resulted in a sustained higher consumption, even after the financial support terminated.

Keywords: vouchers, public subsidies, impact evaluation, cultural consumption

JEL Codes: C21, D12, H50, Z18

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1. Introduction

Voucher schemes have been widely used and evaluated as a public policy tool, for example in the fields of education (Schwerdt et al, 2012; Gazmuri, 2024), healthcare (Brody et al., 2013; Dizon-Ross et al., 2017), labor market training (Hidalgo et al, 2014), childcare (Havnes and Mogstad, 2011) and safety net provision (Hoynes and Whitemore Schanzenbach, 2009). Vouchers transfer purchasing power to target groups with the aim of fostering specific forms of consumption. Similar to in-kind transfers, vouchers might be regarded as preferable to general cash transfers because more effective in raising the target consumption. Yet standard economic theory predicts that the actual impact of a voucher- i.e. the extent to which the scheme will succeed in increasing the target consumption - crucially depends on consumers' preferences.

A novel area of vouchers application is cultural consumption. The rationale for subsidizing cultural consumption (see Frey, 2011 for an overview) is primarily based on efficiency grounds, with arguments spanning from public good components and consumer externalities to non-market demand and slower productivity increases (Baumol and Bowen, 1966). Cultural goods are experience goods, whose quality can only be assessed after consumption and whose taste is acquired, i.e. individuals need familiarity in order to appreciate them and develop greater demand. So lack of prior experience may lead to further inefficiencies, as demand does not accurately reflect the utility that consumers would derive under positive consumption.

Indeed, increasing access and participation in cultural activities has been a long-standing policy goal on both sides of the Atlantic, in the light of their acknowledged benefits, in terms of health and wellbeing (Fancourt and Finn, 2019; Baldin and Bille, 2023) as well as education and empowerment (Skot-Hansen, 2005). However, vouchers have been rarely employed in the cultural sector (Dalla Nogare and Bertacchini, 2015). In cultural policy settings that would generally favour market-oriented forms of public interventions, like the U.S.A., the use of vouchers for subsidizing consumers has indeed been advocated, also in the light of some early experiences (see West, 1986). Yet, public support for the arts remains centred around tax incentives aimed at fostering donors' contributions (Netzer, 2006), despite the fact that these give voice primarily to richer taxpayers and present potentially regressive distributional effects. Vouchers instead present the advantage of assigning full voice, in the allocation of public resources, to all or appropriately selected sets of consumers (Peacock, 1994). In this respect vouchers have been contrasted to direct grants allocated through bureaucracies and art councils, which might pursue their own objectives or paternalistically decide which forms of art are appropriate for the society[1], e.g.

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[1] Indeed, since art councils are composed by individuals appointed by the government for their expertise and knowledge, they tend to foster standards of professional artistic excellence thus risking the promotion of elitism (Chartrand and McCaughey, 1989).

preferring the so-called 'high culture' arts (such as opera, ballet, symphony concerts, etc.) known to involve mostly higher socio-economic status (SES) individuals (Towse, 2005).

To the best of our knowledge, the impact of cultural voucher schemes has never been causally investigated. In what follows, we complement the existing literature on the impact of public voucher schemes in different fields with the addition of evidence on a cultural voucher, exploiting the Italian '18app' initiative (presented in Section 2). With the aim of bolstering cultural consumption, the Italian government introduced in 2016 a voucher for cultural expenditure worth 500€ and receivable by citizen reaching the age of 18, i.e. the legal age of maturity. The 18app policy has inspired later initiatives in France ('Pass culture', introduced in 2021), Spain ('Bono Cultural Joven', introduced in 2022), and Germany ('KulturPass', introduced in 2023), while further initiatives are emerging or under discussion in other countries, a fact that stresses the importance of obtaining causal evidence on the effectiveness of each initiative in relation to the underlying aim and design features.

Using data from the Aspects of Daily Life survey 2013-2019, our empirical analysis (illustrated in Section 3) combines Entropy Balancing with Difference-in-Difference estimation to address the fundamental economic questions around a voucher impact. A first question broadly concerns impact evaluation, i.e. measuring the programme effectiveness in raising the target consumption. Besides, we provide evidence on the voucher impact on specific and different forms of cultural consumption. This is relevant in relation to the debate contrasting different types of public funding for the arts (i.e. tax incentives, grants, vouchers) and their respective adequacy in giving voice to consumers' preferences. The second question concerns the distributional profile of recipients' response, i.e. the extent to which the higher or lower socio-economic status (SES) individuals have responded to the voucher, in relation to their baseline respective consumption levels and the generally higher crowding-out probability for higher SES individuals, more likely to substitute the voucher for money they would have spent anyway.

Our results (presented in Section 4) suggest that the programme overall increased cultural consumption and generated less-than-total crowding out. In terms of SES gradients, the voucher appears to have been effective in particular among lower SES households. Consumers' expenditure preferences favored some, not all, forms of art; yet, for lower SES individuals, including both popular art forms (e.g. cinema) and high-arts (classical concerts and opera). Finally, we offer evidence of a sizeable voucher effect which can be detected even after the financial support termination, along with a spillover effect among the household members of voucher recipients.

2. Cultural Vouchers Design and the Italian 18app

A major voucher design issue concerns identifying the target population, a choice that will potentially determine the effectiveness as well as the fiscal cost of the intervention. The targeting choice should reasonably account for the behavioral pattern observed in the target consumption before the intervention.

The consumption of different forms of art exhibits both an age (Rössel et al., 2017), and a SES gradient (with popular arts being preferred by younger and lower SES consumers). In terms of age, because exposure to culture since the childhood is crucial to the development of a taste, children and young people represent an ideal target, with early investment expected to yield higher returns in the long-run. Besides, targeting resources to younger people, given their wider engagement in social activities, might foster the generation of positive social externalities in consumption. On the other hand, when a voucher finances heterogeneous forms of culture (both highbrow and popular forms) targeting young people could favor the latter in particular.

A more debated point concerns the targeting of cultural vouchers with respect to SES (e.g. through mean- testing[2]), with low SES individuals being both less likely to engage in cultural consumption and, conditional on consuming, less likely to consume high art products (van Hek and Kraaykamp, 2013; Falk and Katz-Gerro, 2016). The use of vouchers targeted to lower SES individuals, for whom finances might constitutes the main barrier to access, could optimally allocate public funds to those with the lowest participation rates (Van der Ploeg, 2006). However, lack of financial resources is plausibly, yet not necessarily, the main barrier to access. For example, according to the most recent data on cultural participation (in Italy, as of 2022)[3] the majority of respondents with low income (first quintile of the income distribution) or lower educational attainment (less than primary, primary, and lower secondary education) indicate 'lack of interest' as the main reason for non-participation, as opposed to financial constraints or the lack of cultural supply in their neighborhood. Clearly, self-reported barriers might fail to fully reflect the actual barriers being experienced and their relative importance.

Lack of interest is more likely affecting high-arts, as especially for high art the taste is acquired, with preferences shaped by education and past experience (Stigler and Becker, 1977). For these reasons, targeting a cultural voucher to lower SES individuals could ultimately results in a cheaper yet unsuccessful minority-only benefit. Moving towards universalism can yield benefits in two key ways. First, cultural consumption generates externalities, often referred to as 'cultural capital externalities' (Bille, 2024), which positively impact society by promoting social inclusion, tolerance, innovation etc. Second, the social dimension and the network effects inherent in cultural consumption can lead to imitative behavior (Di

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[2] Besides, means-testing might brings elements of bureaucratic complexities, creating additional administrative procedures and requirements that could hinder accessibility and participation. Means-tested programmes are well known to be plagued by non take-up (Moffitt, 1983).

[3] Eurostat, https://ec.europa.eu/eurostat/web/culture/database.

Maggio, 1987; Erickson, 1996; Di Maggio, 2011), whereby higher SES individuals would influence and encourage lower SES individuals within the same network to engage in cultural activities.

Against this background, the Italian Culture Voucher, also known as '18app', features a universal (non-means tested) government-funded program for young individuals (18-year-olds), that can be used for a wide and heterogeneous range of cultural goods/services including both high arts and more popular cultural products. Launched in 2016 throughout the country, the program provides eligible participants[4] with a voucher worth 500 euros to be used on cultural goods and activities such as cinema, concert and theater tickets, museum monuments and archaeological parks visits, books, audio-visual publishing products, as well as subscriptions to newspapers and more. Since its introduction, the program has been renewed annually with additional funding and, as of 2022, has become permanent with a maximum annual budget of 230 million euros.

To gain access to the fund, eligible youths must register on a dedicated digital platform (18app.it), accessible from any digital device; the credit must be spent by a predefined date (see Table 1). The process takes place online, with vouchers available for printing or downloading onto smartphones and tablets for in-store purchases, as well as for online transactions.

Table 1: 18app in numbers

Edition	Recipients Citizens born in:	N. of 18 year-olds	N. of 18 year-olds enrolled in 18app	Take-up rate	Voucher budget (million €)	Amount spent (million €)	Use period for spending the voucher
2016	1998	574,953	356,274	.620	290	162	From 03.11.2016 to 31.12.2017
2017	1999	578,810	416,779	.720	290	192	From 19.09.2017 to 31.12.2018
2018	2000	592,000	429,739	.726	290	199	From 07.01.2019 to 31.12.2019
2019	2001	586,879	389,678	.664	240	183	From 05.03.2020 to 28.02.2021
2020	2002	574,707	415,114	.722	220	192	From 01.04.2021 to 28.02.2022
2021	2003	566,163	441,845	.780	220	200	From 17.03.2022 to 28.03.2023
2022[a]	2004	569,709	-	-	230	-	From 31.01.2023 to 30.04.2024

Source: Italian Ministry of Culture. Notes: [a] unavailable data.

According to the Italian Ministry of Culture, around 2.5 million 18-year-olds have joined the initiative since its introduction. The take-up rate has progressively increased from 60 percent in 2016 to 78 percent in 2021, with a cumulative spending of 1.1 billion euros out of the available 1.55 billion euros (see Table 1).

Young people can spend the voucher on a wide variety of cultural items and activities, without distinction between high and popular culture, and between online and physical stores[5]. In this prospect, the cultural voucher is intended to provide an impulse to the autonomous choice of cultural paths closer

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[4] The scheme was initially intended for only Italian natives, but the government will extend the voucher to foreign-born Italians with a residential permit.

[5] There is no spending limit for a single purchase, but it is not possible to purchase several units of the same good or service.

to individual inclinations. The list of cultural goods and activities that can be purchased with the voucher has been expanded over time. Initially, the vouchers could be spent on books, tickets for cinemas, theaters, concerts, cultural events, museums, monuments, and archaeological parks. In 2017, the list was expanded to include recorded music such as CDs, music DVDs, vinyl records, and online music, as well as music courses, theater courses, and foreign language courses; in 2020, subscriptions to newspapers and periodicals, including those in digital format, and audio-visual publishing products were added.[6]

Table 2 reports the edition-specific use rate for each consumption type, as well as the edition-specific distribution of expenditure across the different allowed types. For all the editions, except the 2019 one, books, music, and tickets to movies and concerts were the most commonly requested items by participants of the 18app program. However, due to the COVID 19 lockdown and restrictions on cultural events, there was a notable shift in spending patterns for the 18app-2019[7]. Indeed, for that edition, more than 90 percent of the vouchers issued and approximately 95 percent of total spending were allocated to books and recorded music. This change can be attributed to the limited availability of in-person cultural experiences and the increased focus on at home entertainment options during the pandemic.

Table 2: 18app: use and expense rates, by edition and consumption type

Edition:	2016		2017		2018		2019		2020		2021	
Consumption types:	Use[a]	Exp.[b]	Use[a]	Exp.[b]	Use[a]	Exp.[b]	Use[a]	Exp.[b]	Use[a]	Exp.[b]	Use[a]	Exp.[b]
Cinema	.235	.074	.234	.080	.252	.082	.043	.019	.109	.030	.123	.034
Classical and non-classical concert	.060	.088	.071	.094	.114	.135	.024	.024	.057	.058	.147	.162
Theater	.009	.010	.009	.009	.008	.008	.000	.000	.006	.005	.008	.008
Museum, monument and archeological park	.011	.004	.010	.003	.007	.002	.004	.001	.011	.003	.014	.003
Books	.682	.822	.550	.689	.509	.657	.784	.831	.671	.761	.582	.660
Cultural events	.003	.002	.005	.004	.006	.003	.001	.000	.003	.001	.007	.005
Recorded music			.119	.110	.104	.100	.143	.117	.120	.111	.100	.097
Theater, music and language courses			.002	.010	.002	.012	.002	.009	.003	.015	.002	.014
Audiovisual publishing products									.020	.015	.016	.015
Newspapers									.000	.001	.001	.001

Source: Italian Ministry of Culture. Notes: [a] The use rate is defined as the number of vouchers used (in terms of single purchase act), over the total vouchers per edition. [b] The expense rate is computed as the expenditure for each type of cultural consumption over the total expenditure of that edition.

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[6] While the voucher has been re-financed for several following years, the Italian Budget Law for 2023 has recently changed the policy design, restricting eligibility to reduce its fiscal cost, against the prevailing pattern of design observed for example in Europe (with cultural interventions in France, Spain and Germany sharing the income-inclusive approach of the original 18app). Eligibility has been restricted based on family income (Youth Culture Card, which is conditional on the family income of 18-year-olds) or by achievement in school (Merit Card, receivable by 18-year-olds who get top marks in their high school diploma certificate).

[7] Young individuals who turned 18 in 2019 had the opportunity to use the voucher until February 2021. It is important to note that the period during which the voucher could be spent coincided with the ongoing pandemic.

3. Empirical Analysis

To assess the impact of the cultural voucher on promoting cultural consumption among the target population, we employ individual-level data drawn from repeated cross-sections of the household survey 'Aspects of Daily Life', which is part of the Multipurpose Survey system carried out every year by ISTAT (2021). Beside a household-level questionnaire, all adults aged 16 or older are administered an individual questionnaire covering a wide range of topics including socio-demographic characteristics, educational background, health and labor market activity. The survey also collects detailed information on habits of respondents, including their involvement in diverse cultural activities in the 12 months preceding the interview. These specific questions allow to construct outcome variables covering most of the 18app voucher items, in terms of consumption[8]. In more detail, we exploit three survey questions[9] to construct nine types of cultural consumption variables:1) cinema; 2) classical music concerts or opera; 3) non classical music concert; 4) theater 5) museums and exhibitions; 6) archaeological sites or monuments; 7) books read; 8) online music and films; 9) books purchased online, including e-books. For each typology, we construct a binary indicator (consumption of that item or not in the past 12 months) and a continuous measure reflecting the intensity of consumption (i.e. number of cultural items consumed for each typology, including zero) over the past 12 months[10]. Because the answer to the intensity question is given in intervals, we consider the mid-value in the band of values chosen by the respondent. It is worth stressing that, while the consumption categories recorded in the survey do not entirely correspond to the ministerial typologies (as reported in Table 2), we do manage to capture the quantitatively most relevant, first and foremost cinema and books.

Given the national adoption of the voucher, we adopt a classical Difference-in-Difference (DiD) framework, based on six survey data collections spanning from before (2013) to after (2019) the voucher introduction and contrasting age-eligible respondents (treatment group) with ineligible yet closest in age respondents (control group). In more detail, the years 2013-2016 represent the pre-18app policy period (before), as the first version of 18app comes into effect in November 2016 (see Table 1). We exclude the 2017 survey because the reference period for reporting cultural habits includes both months before and months after the voucher introduction. The years 2018-2019 represent the post-18app policy period

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[8] The survey does not provide information regarding the financial aspect of engaging in cultural activities (amount spent).

[9] The first question regarding specifically the participation in cultural events. Respondents were asked: 'Consider the last 12 months, approximately how many times did you go to theater; to cinema; to museums and exhibitions; to classical music concerts, opera; to other music concert; to archaeological sites, monuments?', with possible response for each of the six activities in the intervals: never, 1-3 times, 4-6 times, 7-12 times, more than 12. In addition, we use the survey question on books reading habits, where individuals were asked: 'Have you read any books (paperbacks, e-books, online books, or audiobooks) in the last 12 months?' If the response was yes, they were further asked: 'How many books have you read in the last 12 months (excluding strictly educational or professional material)? Lastly, we use the question: 'In the last 12 months what types of goods and/or services have you ordered or bought on the internet for private use?' This question provides binary-only responses (yes or no), regarding the choice to purchase music and film (considered jointly) and books (including e-books).

[10] Given the survey questions, the continuous measure is not available for the typology 8) and 9).

(after). Although available, we do not consider the 2020 survey because, unlike previous surveys (running the first quarter of the year), the interviews were carried out from March to September 2020 with responses influenced by the initial impact of the pandemic-related restrictions.

The identification of the treatment group (i.e. respondents entitled to use the cultural voucher in the reference period for the cultural consumption questions) is to be based on age, which is recorded at the time of the interview (first quarter of each survey year). As we do not observe the year or date of birth, to which the normative identification of the entitled population refers (see Table 1), we carefully combine information on the allowed use period of the cultural voucher for each edition (as reported in Table 1) with the age recorded at the time of interview to define the treatment status of respondent in each survey year. The resulting treatment and control groups broadly correspond to respondents aged 18, 19 and 20 (treated individuals having had the chance to use the voucher in the 12 months preceding the interview, if interviewed in years past the voucher introduction) and respondents aged 21, 22 and 23 years (control individuals of closest ages[11] but for whom we can exclude the chance of voucher eligibility). The resulting sample consists of 15,605 individuals, of which 7,668 treated (5,159 before and 2,509 after) and 7,937 controls (5,434 before and 2,503 after). Descriptive statistics for the outcome variables for each subgroup are reported in the top panel of Table 3. In terms of attendance (yes/no), cinema emerges as the type of cultural consumption engaging the vast majority (more than 80%) of responds, followed by reading books (around half of respondents) and then non-classical concerts and museums, engaging slightly less than half of responds; monuments, theaters and classical concerts/opera engage one third or less than respondents, while online purchases involve a 5% to 15% of respondents, with a visibly increasing time trend. It is worth stressing that while in the treatment group the average involvement in cultural consumption is often higher in the post- period (possibly reflecting an effect of the voucher), that is not the case for the control group. However, such raw mean comparison are scarcely indicative, as biased by underlying compositional differences across treatment and control individuals and over time.

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[11] We favour the choice of a slightly older rather than slightly younger control group as the latter would have implied studying the outcomes of individuals aged 16 and 17, which have not yet reached the age of consent as the treatment group has.

Table 3: Descriptive statistics: treatment and control groups, before and after the 18app voucher

	Treat. Before (# 5,159)		Control before (# 5,434)		standz.	Treat. after (# 2,509)		Control after (# 2,503)		standz.
	Mean	*SD*	*Mean*	*SD*	*%bias*	*Mean*	*SD*	*Mean*	*SD*	*%bias*
Consumption (dummy)										
Cinema	.841	.365	.829	.376		.848	.358	.803	.397	
Classical concert/opera	.132	.338	.139	.346		.158	.365	.158	.365	
Non-classical concert	.427	.494	.448	.497		.443	.496	.450	.497	
Theater	.268	.442	.197	.398		.260	.439	.187	.389	
Museum	.421	.493	.359	.479		.487	.499	.433	.495	
Monument	.301	.458	.269	.443		.357	.479	.343	.474	
Books read	.502	.500	.488	.499		.558	.496	.494	.500	
Online music and films	.056	.229	.099	.298		.096	.294	.153	.359	
Online books and eBooks	.079	.269	.048	.215		.208	.406	.074	.262	
Consumption (# of events, incl. zero)										
Cinema	4,002	3,486	4,214	3,719		3,803	3,394	3,621	3,448	
Classical concert/opera	.434	1,472	.456	1,530		.528	1,657	.494	1,545	
Other concert	1,319	2,162	1,426	2,307		1,267	1,984	1,338	2,097	
Theater	.736	1,597	.595	1,598		.722	1,594	.517	1,400	
Museum	1,389	2,292	1,174	2,145		1,623	2,399	1,434	2,298	
Monument	1,021	2,132	.922	2,066		1,293	2,411	1,213	2,320	
Books read	3,177	6,539	2,870	5,482		3,467	6,305	3,308	7,092	
Covariates:										
Female	.470	.499	.479	.499	*-1.9*	.497	.500	.468	.499	*5.9*
Student	.683	.465	.412	.492	*56.6*	.687	.463	.448	.497	*49.9*
Employed	.094	.291	.253	.435	*-43.1*	.132	.339	.316	.465	*-45.1*
Health status (obesity indicator)	.156	.363	.188	.391	*-8.6*	.172	.377	.200	.400	*-7.3*
Living with parent	.957	.201	.888	.315	*26.2*	.939	.238	.904	.293	*12.9*
Parents' highest level of education attained										
- Degree	.211	.408	.249	.432	*-9.0*	.252	.434	.302	.459	*-11.3*
- Upper secondary school	.625	.484	.64	.48	*-3.1*	.627	.483	.623	.484	*0.9*
- Secondary school	.161	.368	.106	.308	*16.3*	.118	.323	.071	.257	*16.0*
- Primary school	.001	.036	.004	.064	*-5.4*	.002	.044	.003	.052	*-1.6*
Self-reported family' financial distress	.497	.500	.502	.500	*-1.0*	.413	.492	.377	.484	*7.4*
Municipality of residence										
- Metropolitan city	.107	.309	.111	.315	*-1.4*	.114	.317	.108	.310	*1.8*
- Metropolitan area	.092	.289	.082	.275	*3.5*	.098	.297	.101	.302	*-1.0*
- Municip. over 50,000 inhabitants	.165	.371	.164	.370	*0.3*	.163	.369	.158	.365	*1.3*
- Municip. between 10,000 and 50,000 inhabitants	.282	.450	.289	.453	*-1.5*	.276	.447	.278	.448	*-0.6*
- Municip. between 2,000 and 10,000 inhabitants	.268	.443	.267	.442	*0.2*	.268	.442	.279	.448	*-2.5*
- Municip. under 2,000 inhabitants	.083	.276	.084	.278	*-0.3*	.081	.272	.075	.262	*2.3*

Table 4: CEM and Entropy Balancing: balance achieved after adjustment

Covariates:	CEM				Entropy Balancing			
	before voucher		after voucher		before voucher		after voucher	
	standz. %bias	t-test: p-value	standz. %bias	t-test: p value	standz. %bias	t-test: p value	standz. %bias	t-test: p value
Woman (female)	-0.2	.919	-1.5	.584	0.2	.939	0.0	.987
Student	0.2	.930	1.5	.586	0.0	.982	0.1	.965
Working status (employed)	-0.1	.967	-0.7	.752	-0.2	.908	-0.1	.969
Health status (obesity indicator)	-3.2	.094	-3.3	.227	-0.1	.962	-0.1	.983
Living with parent	-0.7	.637	-1.8	.472	0.0	.977	0.0	.989
Parents' highest level of education attained								
- *degree*	-18.4	.000	-22.2	.000	0.1	.966	0.0	.992
- *upper secondary school*	15.6	.000	16.5	.000	-0.1	.971	0.0	1.000
- *secondary school*	0.9	.683	6.5	.030	0.0	.999	-0.0	.988
- *primary school*	-1.5	.324	0.5	.839	-0.0	.990	-0.0	.999
Self-reported family' financial distress	0.2	.920	-0.7	.806	-0.0	1.000	0.0	.999
Municipality of residence								
- *Metropolitan centre*	-2.6	.190	-2.5	.392	-0.1	.944	0.2	.940
- *Metropolitan area*	-1.4	.494	-0.7	.807	-0.1	.928	-0.0	.989
- *Municipality over 50,000 inhabitants*	-3.9	.049	0.1	.970	0.1	.978	-0.1	.985
- *Municipality between 10,000 and 50,000 inhabitants*	-3.0	.129	0.9	.759	0.4	.834	-0.1	.979
- *Municipality between 2,000 and 10,000 inhabitants*	6.7	.000	-1.5	.599	0.2	.909	-0.1	.979
- *Municipality under 2,000 inhabitants*	3.6	.054	4.5	.100	-0.2	.958	0.1	.969

The bottom panel of Table 3 reports descriptive statics for relevant determinants of cultural consumption. On top of gender and student versus working status, we consider health (specifically, an obesity indicator). Indeed, unhealthy individuals may have limited time and energy to engage in cultural activities and may prioritize their health and well-being over cultural pursuits; also, depending on the nature of their health conditions, they may face challenges in accessing certain cultural venues or activities (Fancourt and Finn 2019). We also consider the household educational level. In cultural demand studies, education is typically associated with the stock of cultural capital as formulated by Bourdieu (1986). As our sample is largely composed by individuals still in education (and generally likely to still cohabit with parents), we regard the underlying cultural capital endowment as best proxied by the parents' level of education (Ateca-Amestoy, 2008) and measure the highest level of education attained by any family member (in 4 increasing levels[12]). Household economic circumstances are captured in terms of self-reported economic distress[13] (whether household's financial resources are perceived as scarce or

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[12] No educational certificates or primary school certificate; secondary education certificate; high school graduation; university or postgraduate degree.

[13] Due to the lack of appropriate information on household earnings and income, we use the responses to the question on the self-reported financial status: 'With reference to the last 12 months and bearing in mind the needs of all household members,

absolutely insufficient, or not). We also consider the size of the municipality of residence[14] to proxy for the availability of cultural opportunities, as larger municipalities tend to offer a wider range of cultural possibilities.

In our causal evaluation setting, selection into treatment depends on age, an individual characteristic that cannot be altered through individual behavior. While this is reassuring for identification purposes, we acknowledge that compositional differences between treatment and control units could still arise in relation to underlying population trends and in relation to the slightly older age of control individuals. An inspection of the standardized percentage bias[15] between treated and control individuals in the pre- and post- periods (Table 3) reveals that indeed some covariates distributions are unbalanced between treatment and control units (in particular in terms of likelihood of student/worker status and cohabitation with parents). The concern that these covariates might act as potential confounders calls for a preprocessing type of adjustment, in the spirit of Ho et al. (2007). To this end, the parametric analysis is preceded by an Entropy Balancing adjustment (Hainmueller, 2012) which serves the purpose of balancing the distribution of the full set of potential confounders between the treatment and control individuals, separately for the pre- and post- periods. In more detail, Entropy Balancing (EB) minimizes an entropy distance metric subject to balance (equality of means between treated and retained control individuals) and normalizing constraints, and ultimately generates weights balancing the full set of covariates. These weights are then embedded in the following parametric analysis.

As an alternative preprocessing procedure, we employ Coarsened Exact Matching (Iacus et al., 2011). In this case, the preprocessing implements an exact matching through stratification, paired with the exclusion of observations found in strata where either only treated or only control individuals pertain. CEM results in exact matching for dichotomous variables, while continuous variables are coarsened into intervals. CEM is a relatively data hungry procedure (with respect to Entropy Balancing), as it improves the balance on each involved variable without worsening the balance for other involved variables: this necessarily happens at the cost of reducing the sample size available for the following parametric estimates, in particular as the set of involved variables (i.e. included potential confounders) increases. For this reason, we implement a CEM adjustment involving only a selected set of dichotomous variables, chosen because regarded as most relevant potential confounders, namely: gender, student status, working status, cohabiting with parents, financial distress, higher educational qualification in the household and being interviewed before (versus after) the voucher introduction.

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how were the household's overall economic resources?', with possible response: excellent, adequate, scarce, absolutely insufficient. The responses were then dichotomized into a dummy variable, denoted financial distress, that takes the value of 1 if the individual considers his/her household's financial resources scarce or absolutely insufficient, and zero otherwise.
[14] We consider a categorical variable with 6 levels: municipality with less than 2.000 inhabitants; between 2.000 and 10.000 inhabitants; between 10.000 and 50.000 inhabitants; more than 50.000 inhabitants; centre of metropolitan area (which refers to the 14 largest Italian cities); suburbs of metropolitan area.
[15] The standardized percentage bias is computed as the difference in the average for treated and control units, divided by the standard deviation and represents a summary measure of lack of balance between the two groups being contrasted.

The success of a preprocessing procedure is to be judged in terms of distributional balance achieved. EB appears superior in this respect (see Table 4 for the achieved standardized percentage bias and the p-value for the means t-test), probably in relation to the wider set of variables that can be targeted to be balanced. For this reason, we select EB as the preprocessing method preceding the parametric estimates[16].

Our main parametric estimate is described by the following DiD specification:

$$y_i = \alpha + \beta_1\, treatment_i + \beta_2\, post_i + \beta_3 treatment_i \text{ x } post_i + \gamma X_i \quad\quad (1)$$
$$+ year + region + region \text{ x } year + \varepsilon_i$$

where y_i denotes the specific outcome of interest (for each type of cultural consumption, the binary or the count indicator); $treatment_i$ is an indicator of respondent i being in the treatment group or not and $post_i$ is a dummy variable denoting whether individual i has been interviewed after the implementation of the 18app (or before). The coefficient on the interaction term $treatment_i \cdot post_i$ captures the intention-to-treat (ITT) effect of the voucher introduction. On top of the X_i variables (control variables known to represent determinants of cultural participation) , we include a full set of year and regional dummies and their interaction, so that we can control for any within-region time-varying confounding factors, such as public expenditure on cultural services and cultural supply.

To further test the validity of our identification strategy, we complement the DiD estimate on balanced samples with a set of outcome-specific parallel trend test. To this end, we run the following regression on the pre-voucher introduction observations:

$$y_i = \theta + \delta_1\, year_i + \delta_2\, treatment_i + \delta_3 treatment_i \text{ x } year_i + \varepsilon_i \quad\quad (2)$$

and test the significance of the estimated δ_3 coefficient (with and without controlling for the full set of other covariates X), reassuringly never achieved (see specific row in each table of results).

Finally, we run a placebo test on respondents observed before the voucher introduction: in this case we replicate the main analysis considering a placebo voucher introduction fictitiously happened in 2014, and contrast in a similar DiD estimate the 2013-2014 (pre placebo voucher) survey responses with the 2015-2016 responses (post placebo vouchers) for the treatment and control groups (as in (1), and also applying the preprocessing adjustment). Again, reassuring results for the relevant estimated coefficient emerge (and are visible in the specific row in each table of results).

4. Results

4.1 Overall voucher effect

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[16] However, results obtained when applying the alternative CEM adjustment are also reported in Appendix.

The upper part of Table 5 reports the linear probability model estimates for the binary indicator of attendance to different types of cultural consumption. For convenience, in the tables we report only the main estimated coefficient of interest (β_3), while full results can be found in Appendix (Tables A1 and A2). A significant increase is registered in the probability of going to the cinema, amounting to a 6 percentage points increase in the probability of participation, which correspond to a 7% relative size effect (RSE)[17], to non-classical concerts (4 percentage points increase in probability, corresponding to a 10% RSE) and of reading books (4 and 7 percentage points increase in the probability of reading books and online books respectively, corresponding to a 8% and 52% RSE). Such evidence suggests that the voucher has indeed succeeded in breaking the barriers to entering some types of cultural consumptions and is closely confirmed when using CEM as alternative preprocessing procedure (See Appendix Table A3).

The central part of Table 5 reports instead the OLS estimates[18] for the number of episodes of cultural consumption (including zeros). A positive and significant effect is found only for cinema, with an increase of around 0.56 visits per year, which corresponds to a 17% RSE. Very similar results are obtained under CEM preprocessing (Appendix Table A.3). As to the other types of consumption, no significant increase in the number of events is registered, with only attendance to non-classic concerts approaching significance. It is important to stress that these outcome measures are constructed from answers given in terms of frequency ranges. It is therefore possible that our analysis fails to capture slight actual increases not detected due to the way in which the frequency variables are designed in the survey (i.e. although the consumption has increased, individuals remain in the same frequency range). This would explain why we do detect entrants in some types of consumption for which an overall frequency increase is not detected..

The bottom part of Table 5 reports further evidence in support of our identification strategy i.e. insignificant results for the Placebo voucher (fictitiously happened in 2014) and δ_3 coefficients lacking significance, thus failing to reject the Parallel trend assumption underlying our preferred DiD specification.

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[17] RSE are computed as the ratio between β_3 and the counterfactual consumption probability.
[18] The OLS specification has been chosen over count data models due to the non-linear nature of the latter, less suited when interested in interpreting the size of interaction effects (as is our main coefficient of interest β3).

Table 5: 18app effect on cultural consumption: EB-weighted Difference in Difference Estimates

	Cinema	Classical concert/ opera	Non-classical concert	Theater	Museum	Monum.	Books read	Online music and films	Online books and eBooks
Consumption (dummy)[a]:									
β_3 Treatment x After voucher introduction	**.056***	.022	**.041**	.017	.027	.009	**.042**	.018*	**.071***
	(.014)	(.014)	(.019)	(.016)	(.018)	(.018)	(.018)	(.010)	(.014)
Observations	15,223	15,107	15,157	15,175	15,155	15,160	15,223	15.525	15.525
R-squared	.093	.030	.054	.096	.187	.133	.174	.032	.092
Placebo voucher:									
β_3 *Treatment x After voucher introduction*	*-.007*	*.026*	*-.016*	*.024*	*-.001*	*-.005*	*.021*	*.010*	*.012*
	(.015)	*(.016)*	*(.022)*	*(.019)*	*(.021)*	*(.020)*	*(.021)*	*(.014)*	*(.012)*
Consumption (# of events, incl. zero)[b]:									
β_3 Treatment x After voucher introduction	**.558***	.085	.165*	.086	.086	.033	-.351	-	-
	(.132)	(.061)	(.085)	(.059)	(.086)	(.086)	(.253)	-	-
Observations	15,223	15,107	15,157	15,175	15,155	15,160	15,223	-	-
R-squared	.113	.024	.044	.069	.133	.091	.087	-	-
Placebo voucher:						3			
β_3 *Treatment x After voucher introduction*	*-.059*	*.059*	*-.063*	*.031*	*-.021*	*.024*	*0.113*	-	-
	(.156)	*(.069)*	*(.112)*	*(.070)*	*(.098)*	*(.094)*	*(.260)*	-	-
Parallel trends test (number of events):									
δ_3 Treatment x Year	-.025	.013	-.008	-.001	-.006	-.004	.027	-	-
	(.074)	(.029)	(.048)	(.034)	(.047)	(.044)	(.125)	-	-
δ_3 Treatment x Year, with covariates	-.018	.011	-0.010	.002	-.008	-.004	.024	-	-
	(.071)	(.029)	(.047)	(.033)	(.045)	(.042)	(.122)	-	-

Notes: [a] Linear probability models; control for treatment status, after voucher introduction, all covariates reported in Table 3, year f.e., region f.e, year#region f.e.;[b] ordinary least square models; control for treatment status, after voucher introduction, all covariates reported in Table 3, year f.e., region f.e, year#region f.e; robust standard errors in parenthesis;
*** p<0.01, ** p<0.05, * p<0.1.

4.2 SES gradient in response

Next, we explore whether the voucher had heterogeneous effects by socio-economic status (SES) captured by the highest level of education attained by any family member. The cultural economics literature is unanimous in recognizing the crucial role of education as a factor influencing cultural participation. As shown by Yaish and Katz-Gerro (2012), the relationship between education attainment and cultural participation is mediated by taste and preference (and thus interest) for cultural consumption, as a better education provides individuals with cognitive skills that allow to appreciate and enjoy more easily cultural goods. In the classical sociological Bourdieu's framework (1984), such effect holds for the so-called highbrow (established, serious) culture, used to affirm the belonging to an upper social class, as opposed to the so-called lowbrow (popular, entertained) culture. Nowadays the prevailing dimension of cultural differentiation driven by education concerns the breadth of cultural interest: more educated people show an omnivorous (i.e. both lowbrow and highbrow culture) pattern of consumption, while less educated people engage more in lowbrow cultural activities (see Peterson, 1992; Jaeger and Katz-Gerro, 2010; Katz-Gerro and Jaeger, 2013, Pomies and Arsal, 2023). Cultural preferences and tastes are shaped both at schools and in the family, where in the latter case the family (parents) background is thought to pass to their children the habitus towards cultural experiences. Family background is typically proxied through parents' educational attainment, considered as a strong predictor of interest for art and culture, and thus cultural participation (Van Eijck, 1997; Willekens and Lievens, 2014; Willekens et al., 2014). Besides being considered the strongest determinant of cultural participation, related to cultural capital and thus with a general interest in culture (Suarez-Fernandez et al., 2020), education is also correlated with household financial resources (known to suffer, though, from measurement error when recorded in surveys) also associated with more frequent cultural participation[19]. Indeed, both education and financial distress, while highly correlated, emerge as significant predictors of cultural consumption in our estimates (See Table A.1 in Appendix).

For these, reasons, an important element of valuation for the 18app policy concerns its success in involving new lower SES consumers. We categorized respondents as higher SES if the highest level of education attained by any family member corresponds to completing a university degree or above, and lower SES if no household member has achieved university graduation (with descriptive statistics for these two subgroups reported in Appendix Table A.4). In this respect, results reported in Table 6 suggest that the policy has been particularly effective in fostering the cultural consumption of lower SES

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[19] Income predicts higher cultural participation, regardless the type of cultural form (for museums, historical monuments and archeological sites, see Falk & Katz-Gerro, 2016; for cinema attendance, see Sisto & Zanola, 2010; for the performing arts, see Seaman, 2006; for purchasing of books, see Hjorth-Andersen, 2000), a finding that is also confirmed by our estimates (Appendix Table A.1, with the variable 'financial distress' is negative and strongly significant for all the cultural forms, except for classical music concerts / opera where the effect is still negative but weakly significant).

individuals, as the β_3 coefficients on higher SES individuals generally lack significance (the only exception being the probability of consuming online books and e-books, which register a sizeable increase of 11 percentage points, corresponding to a 56% RSE). On the contrary, lower SES recipients appear to have responded not only in terms of novel cultural participation, where significant entries in the consumption of cinema (8% RSE), non-classical concerts (14% RSE), books (10% RSE) and e-books (56%) emerge, but also in terms of consumption events. Significant and sizeable increases emerge for the number of cinema events (20% RSE), classic (45% RSE) and non-classic (23% RSE) concerts attended and museum visits (16% RSE). Such SES pattern in response does not come as a surprise, as, in the absence of the voucher, for lower SES people the price of a cultural experience might constitute a barrier to participation. Such findings support the view that income resources might be successful in fostering cultural consumption despite the lower interest that low SES individuals are generally though to embody, especially with respect to high culture that requires a long-standing development of taste.

An aspect of policy concern is the possibility that public funding might have simply displaced private expenditure, which would correspond to inefficient public spending. In Table 7, combing official voucher expenditure data per item (see Tables 1 and 2) with average prices per item, and our estimated causal increases in each consumption item, we are able to provide a quantitative indication of the possible extent of crowding out. Overall, for cinema and non-classical concerts, i.e. the two items for which the average causal increase in number of events is (more) precisely estimated, our calculations suggest respectively a 13 cents and 19 cents increase in expenditure per 1 public euro spent. We then repeat the calculations separately for higher and lower SES subgroups. In the lower SES population, where the voucher-induced increase in the number of cultural events consumed is precisely estimated also for classical concerts/opera, theaters and museums, we estimate 14 cents (cinema), 26 cents (non-classical concerts), 28 cents (classical concerts/opera) and 56 cents (theaters) increases in expenditure per 1 public euro spent; interestingly, museums features a case of crowding-in, with each public euro spent is matched by 97 additional cents of private resources, spent on top. Although to be taken with some caution, similar figures provide evidence in favour of a less-than-total crowing out.

Table 6: 18app effect on cultural consumption, by SES: EB-weighted Difference in Difference Estimates

	Cinema	Classical concert	Other concert	Theater	Museum	Monuments	Books	Online music/movies	Online books and eBooks
Consumption dummy[a]:									
HIGH SES: β_3 Treatment x After voucher	.018	-.029	.001	-.013	-.014	-.030	.016	.019	**.107***
	(.023)	(.029)	(.036)	(.033)	(.034)	(.035)	(.032)	(.020)	(.030)
Obs.	3,743	3,726	3,733	3,729	3,734	3,729	3,742	3,817	3,817
LOW SES: β_3 Treatment x After voucher	**.062***	.031*	**.052**	.031*	.041*	.024	**.049***	.018	**.064***
	(.016)	(.016)	(.022)	(.018)	(.021)	(.021)	(.021)	(.012)	(.016)
Obs.	11,480	11,381	11,424	11,446	11,421	11,431	11,481	11,708	11,708
Test of coefficient difference HIGH/LOW SES (p-value)	.122	.064	.155	.221	.207	.208	.447	.917	.374
Consumption (# of events, incl. zero)[b]:									
HIGH SES: β_3 Treatment x After voucher	.394	-.189	-.123	.005	-.197	-.201	-.835	-	-
	(.260)	(.131)	(.168)	(.131)	(.193)	(.198)	(.536)	-	-
Obs.	3,743	3,726	3,733	3,729	3,734	3,729	3,742	-	-
LOW SES: β_3 Treatment x After voucher	**.621***	**.159**	**.226**	.112*	**.195**	.128	-.147	-	-
	(.154)	(.068)	(.096)	(.066)	(.099)	(.096)	(.296)	-	-
Obs.	11,480	11,381	11,424	11,446	11,421	11,431	11,481	-	-
Test of coefficient difference (p-value)	.534	**.017**	**.041**	.488	.063	.116	.228	-	-

Notes: [a] Linear probability models; control for treatment status, after voucher introduction, all covariates reported in Table 3, year f.e., region f.e., year#region f.e.;[b] ordinary least square models; control for treatment status, after voucher introduction, all covariates reported in Table 3, year f.e., region f.e, year#region f.e; robust standard errors in parenthesis;
*** p<0.01, ** p<0.05, * p<0.1.

Table 7: Extent of crowding out

	Cinema	Classical Concert/ Opera	Other concert	Theater	Museum	Monuments	Books
Average price[a]	6.32	26.96	34.49	13.53	5.10	5.10	20.04
Per-capita publicly funded # events (average)[b]	4.361	0.561	0.877	0.199	0.099	0.033	11.020
Per-capita voucher-induced additional # events (average)[c]	0.558	0.085	0.165	0.086	0.086	0.033	-0.351
Additional expenditure generated, per public euro spent[d]:							
ALL	**0.13**	0.15	**0.19**	0.43	0.87	1.00	-0.03
HIGH SES	0.09	-0.34	-0.14	0.03	-1.99	-6.10	-0.08
LOW SES	**0.14**	**0.28**	**0.26**	0.56	**1.97**	3.88	-0.01

Notes: [a] Sources: SIAE (2019); Beretta et al. (2019); ISTAT (2019). [b] Computed as the ration between the aggregate voucher public expenditure on the specific item divided by the average price per event and the number of eligible individuals involved [c] Corresponds to β_3 as of Table 5, bottom panel (number of consumption events). [d] Computed as the ration between the per capita additional events (by SES, in corresponding rows) and the per –capita publicly funded events or alternatively, as the additional voucher induced expenditure on the item/public expenditure on the item. In bold if the underlying treatment effect is statistically significant at least at the (p<0.1) level.
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4.3 Further analyses: spillover effects and longer-tem effects

We further investigate the impact of the introduction of the voucher 18app on cultural consumption by considering possible spillover effects to other individuals. Given the underlying survey design, the presence of spillover effects can be investigated only with respect to other family members, in particular parents and siblings. This part of the analysis focuses on the types of cultural consumptions for which an effect has been found on target beneficiaries (i.e. cinema, non-classic concerts and books) and therefore a potential spillover effect can be expected. The analysis is conducted following the baseline methodology explained in Section 3 but re-defining the treatment and control groups. In more detail, we investigate the presence of spillover effects on parents and siblings separately. In the first case, we contrast a spillover-treatment-group of parents of those *eligible* to receive the voucher (i.e. parents of baseline treated aged 18, 19, 20) with a spillover-control-group of observationally equivalent parents of individuals *not eligible* to receive the voucher (i.e. parents of baseline controls aged 21, 22, 23). For siblings instead, we contrast a spillover-treatment-group of siblings of those *eligible* to receive the voucher (i.e. siblings of baseline treated aged 18, 19, 20 and not themselves baseline treated) with a spillover-control-group of observationally equivalent siblings of individuals *not eligible* to receive the voucher (i.e. siblings of baseline controls aged 21, 22, 23 and not themselves baseline treated). In each case, observational equivalence between treated and control individuals is achieved through an entropy balance adjustment, along the lines of what explained in Section 3. Results, reported in Table 8, do suggest the presence of a spillover effect on parents, in terms of entry into online books and e-books consumption, with a RSE amounting to 21%; while for siblings only the positive point estimate on cinema approaches significance.

Table 8: Spillover effects in parents and siblings: EB-weighted Difference in Difference Estimates

		Cinema	Non-classical concerts	Books	Online books and eBooks
Consumption (Dummy)[a]:					
β_3 SIBLINGS:	Treatment x After voucher	.052*	.006	-.013	.001
		(.030)	(.034)	(.032)	(.022)
	Observations	3,783	3,762	3,785	3.881
	R-squared	.173	.124	.248	.111
β_3 PARENTS:	Treatment x After voucher	.000	.002	.006	**.017****
		(.015)	(.012)	(.013)	(.008)
	Observations	22,679	22,554	22,662	23,018
	R-squared	.129	.055	.224	.072

Notes: [a] Linear probability models; control for treatment status, after voucher introduction, all covariates reported in Table 3, year f.e., region f.e, year#region f.e.; robust standard errors in parenthesis; *** p<0.01, ** p<0.05, * p<0.1.

Finally, we investigate whether the voucher might have increased cultural consumption for the target population in the longer run, due to developing a taste for cultural consumption in relation to having

benefited from the voucher in the past and in light of the rational addiction (Stigler and Becker, 1977; Becker and Murphy, 1988) and "learning by consuming" (Levi-Garboua and Montmarquette, 1996) characteristics of the cultural consumption. To this end, we use the 2016 (pre-) and 2019 (post-) samples, and contrast individuals aged 20 (which, when observed in the 2019 survey, have terminated their period of use for the voucher, after having been entitled before) with individuals aged 22 (which, when observed in the 2019 survey, have never been entitled to the 18app voucher because "too" old when it was first introduced). DiD results are reported in Table 9. We focus on the number of consumption events (rather than the dummy for consumption) as the sensible outcome to consider, because we are seeking to capture a possible sustained higher consumption by individuals that were already consumers or were prompted to enter consumption with the voucher introduction. Results suggest that, as far as cinema is concerned, the voucher has causally brought to higher consumption maintained in the longer run, with a RSE amounting to 28%, even after the financial support termination. The other point estimates are positive, and approach significance in the case of books.

Table 9: Effects after voucher termination: EB-weighted Difference in Difference Estimates

	Cinema	Non-classical concerts	Books
Consumption (# of events, incl. zero)[a]:			
β_3 Treatment x After voucher	**.837****	.114	1.314*
	(.368)	(.227)	(.699)
Observations	1,645	1,637	1,640
R-squared	.140	.058	.138

Notes: [a] Ordinary least square models; control for treatment status, after voucher introduction, all covariates reported in Table 3, year f.e., region f.e, year#region f.e; robust standard errors in parenthesis; *** p<0.01, ** p<0.05, * p<0.1.

5. Conclusions

We contribute to the literature on the causal impact of public voucher schemes in different areas of public interest with the addition of evidence on a novel area of public intervention, i.e. cultural consumption. To the best of our knowledge, this study represents the first attempt to assess the effectiveness of a cultural voucher scheme. In more detail, we have offered a causal impact evaluation of the Italian 18app, an universal open-ended voucher scheme receivable by all those reaching 18 years of age and allowing to personalize cultural consumption experiences based on own preferences.[20]

Overall, our causal results show a significant increase in cultural consumption among the intended beneficiaries, and importantly for the type of consumption under study, the voucher-induced presence

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[20] The OECD Observatory of Public Sector Innovation (OPSI) discuss these 18App features as elements of policy interest. Also, it has been noted how the implementation of a digital platform and the online use of the voucher, has contributed to the slow process of digitalization of the Italian public administration.

of new entrants into the cultural market. The causal effects estimated on specific consumption items are indicative of youth preferences for specific types of consumptions, with the bulk of entry effects being found for cinema, non-classical concerts, books and e-books. In terms of effect heterogeneity, the voucher consequences are more sizeable among lower SES individuals, suggesting that the 18app has somewhat contributed to breaking the financial barrier to access they might face. Importantly, in the light of the design issues discussed in Section 2, their response is not confined to popular art forms, but involves also high arts (namely, entry into consumption of classical concerts/opera). In terms of effect persistence and taste development, we document a sustained higher cinema consumption – against a pre-existing documented trend of reduction in cinema presences (SIAE, 2022) - even after the financial support terminated. A potential inefficiency of policy concern would arise if public funding had simply and fully displaced private expenditure. Yet combing official voucher expenditure data per item with average prices and our estimated causal increases per consumption item, we provide a quantitative indication in favour of less than-total crowding-out.

It is important to stress how, given the multiple social dimensions of many forms of cultural consumption (e.g. positive consumption externalities, simultaneous consumption), our estimates reflect both the direct voucher effect on recipients' and the indirect effect that might have operated through a social multiplier mechanism among young people. While it is the combined effect that is ultimately relevant to gauge the programme effectiveness, our data do not allow us to separately identify the direct and social multiplier effect. This would bear relevant implications though, with respect to the universalism versus means-testing design. Means-testing might hamper the beneficial social multiplier effect through non take-up (e.g. in relation to the stigma attached to using vouchers as opposed to own resources) or through the exclusion of mid-to-low income individuals not passing the means-test but still experiencing financial barriers to consumption. Such arguments would lose strength if the social multiplier mechanisms were shown of little relevance; however, our evidence of some positive spillover effects detected even within households rather hints at a role played by social multiplier mechanisms.

Our study hopefully contributes also to providing useful insights to policy makers and private donors interested in the cultural sector. Future analyses of other voucher schemes will contribute to further enhancing our understanding of young individuals' cultural preferences and their responsiveness to public art vouchers, ultimately improving the chances for effective, evidence-based, policy design.

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Appendix

Table A.1: Consumption (dummy): EB-weighted Difference in Difference Full Estimates

	Cinema	Classical concert /opera	Non-classical concert	Theater	Museum	Monument	Books read	Online music & films	Online books & eBooks
Treatment	-.024**	-.031**	-.092***	.069***	-.013	-.046***	-.064***	-.009	-.072***
	(.012)	(.013)	(.018)	(.015)	(.017)	(.016)	(.016)	(.009)	(.012)
After voucher introduction	-.017	.006	-.025	-.047	.002	-.100	-.003	.107**	.216***
	(.049)	(.044)	(.076)	(.064)	(.073)	(.070)	(.061)	(.052)	(.047)
Treatment *x* After voucher introduction	**.056***	.022	**.041**	.017	.027	.009	**.042**	.018*	**.071***
	(.014)	(.014)	(.019)	(.016)	(.018)	(.018)	(.018)	(.010)	(.014)
Woman	.028***	.002	.008	.081***	.068***	.030***	.177***	-.026***	.034***
	(.007)	(.007)	(.009)	(.008)	(.009)	(.008)	(.009)	(.005)	(.006)
Student	.135***	.059***	.137***	.128***	.245***	.201***	.247***	.0341***	.097***
	(.009)	(.008)	(.011)	(.009)	(.0104)	(.009)	(.0109)	(.006)	(.006)
Employed	.082***	.031***	.070***	-.000	-.034***	-.027***	-.034***	-.010	-.027***
	(.012)	(.009)	(.014)	(.010)	(.012)	(.010)	(.013)	(.006)	(.007)
Health status (obesity indicator)	-.011	.000	-.020*	-.001	-.011	-.003	-.010	.019***	.011
	(.009)	(.008)	(.012)	(.010)	(.011)	(.012)	(.011)	(.007)	(.008)
Living with parent	.062***	-.004	.063***	.027**	.031*	.030**	.025	-.007	.001
	(.014)	(.013)	(.017)	(.014)	(.016)	(.015)	(.017)	(.009)	(.011)
Parents' highest level of education attained									
- Upper secondary school	-.002	-.052***	-.050***	-.092***	-.137***	-.123***	-.092***	-.004	-.050***
	(.007)	(.009)	(.011)	(.010)	(.010)	(.011)	(.010)	(.006)	(.008)
- Secondary school	-.115***	-.082***	-.154***	-.129***	-.260***	-.224***	-.225***	-.020**	-.105***
	(.014)	(.012)	(.017)	(.014)	(.016)	(.015)	(.016)	(.009)	(.010)
- Primary school	-.384***	-.099***	-.081	-.099**	-.199***	-.221***	-.228***	-.036***	-.085***
	(.088)	(.035)	(.087)	(.050)	(.065)	(.028)	(.067)	(.013)	(.019)
Self-reported family' financial distress	-.043***	-.012*	-.042***	-.036***	-.046***	-.045***	-.009	-.011**	-.012*
	(.007)	(.007)	(.010)	(.008)	(.009)	(.009)	(.009)	(.005)	(.006)
Municipality of residence									
- Metropolitan area	-.006	.014	-.041**	-.039**	-.047**	-.034*	-.051***	.008	.006
	(.014)	(.014)	(.021)	(.018)	(.019)	(.018)	(.019)	(.012)	(.012)
- Municipality over 50,000 inhabitants	-.033***	.002	-.032*	-.075***	-.069***	-.035**	-.075***	-.005	.017

	(.013)	(.013)	(.019)	(.016)	(.018)	(.017)	(.017)	(.010)	(.012)
- Municipality between 10,000 and 50,000 inhabitants	-.047***	.006	-.012	-.084***	-.065***	-.044***	-.059***	-.008	0.021**
	(.012)	(.012)	(.017)	(.015)	(.016)	(.016)	(.016)	(.009)	(.011)
- Municipality between 2,000 and 10,000 inhabitants	-.070***	.003	-.047***	-.111***	-.094***	-.053***	-.056***	-.008	0.031***
	(.012)	(.013)	(.018)	(.015)	(.016)	(.016)	(.016)	(.009)	(.012)
- Municipality under 2,000 inhabitants	-.078***	.005	.003	-.079***	-.088***	-.048**	-.043**	-.008	.046***
	(.017)	(.016)	(.023)	(.019)	(.021)	(.021)	(.020)	(.012)	(.016)
Observations	15,223	15,107	15,157	15,175	15,155	15,160	15,223	15,525	15,525
R-squared	.093	.030	.054	.096	.187	.133	.174	.092	.032

Notes: [a] linear probability models; control for treatment status, after voucher introduction, all covariates reported in Table 3, year f.e., region f.e, year#region f.e.;[b] ordinary least square models; control for treatment status, after voucher introduction, all covariates reported in Table 3, year f.e., region f.e, year#region f.e; robust standard errors in parenthesis; *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Table A.2: Consumption (#events, incl. zero): EB-weighted Difference in Difference Full Estimates

	Cinema	Classical concert/ opera	Non-classical concert	Theater	Museum	Monument	Books read
Treatment	-.519***	-.094	-.446***	.127**	-0.055	-.103	-.311
	(.123)	(.059)	(.086)	(.062)	(.082)	(.076)	(.225)
After voucher introduction	-1.024**	-.013	-.290	-.217	-.176	-.083	-.506
	(.461)	(.191)	(.366)	(.196)	(.340)	(.368)	(1.425)
Treatment *x* After voucher introduction	**.558***	.085	.165*	.086	.086	.033	-.351
	(.132)	(.061)	(.085)	(.059)	(.086)	(.086)	(.253)
Woman	.251***	-.054*	-.165***	.266***	.270***	.114***	1.591***
	(.065)	(.029)	(.045)	(.028)	(.042)	(.041)	(.119)
Student	1.103***	.210***	.461***	.329***	.774***	.651***	1.675***
	(.077)	(.033)	(.055)	(.030)	(.044)	(.042)	(.127)
Employed	.619***	.123***	.174***	-.027	-.177***	-.140***	-.537***
	(.096)	(.042)	(.061)	(.035)	(.052)	(.049)	(.136)
Health status (obesity indicator)	.0148	.038	-.118**	.019	-.041	-.061	.348**
	(.084)	(.038)	(.052)	(.035)	(.051)	(.048)	(.167)
Living with parent	.559***	-.053	.231***	.042	.190***	.065	.242
	(.115)	(.059)	(.071)	(.054)	(.067)	(.073)	(.196)
Parents' highest level of education attained							
- *upper secondary school*	-.185**	-.198***	-.195***	-.296***	-.666***	-.586***	-1.100***
	(.079)	(.039)	(.052)	(.040)	(.056)	(.056)	(.153)
- *secondary school*	-.906***	-.296***	-.480***	-.447***	-1.102***	-.911***	-2.160***
	(.120)	(.053)	(.088)	(.048)	(.069)	(.067)	(.190)
- *primary school*	-1.125*	-.096	.090	-.085	-.430	-.650*	-1.800***
	(.629)	(.394)	(.520)	(.365)	(.361)	(.338)	(.537)
Self-reported family' financial distress	-.568***	-.016	-.084*	-.116***	-.224***	-.145***	.129
	(.067)	(.030)	(.045)	(.030)	(.042)	(.041)	(.119)
Municipality of residence							
- *Metropolitan area*	-.247	.038	-.145	-.229***	-.388***	-.332***	-.317
	(.152)	(.073)	(.106)	(.070)	(.096)	(.097)	(.278)
- *Municipality over 50,000 inhabitants*	-.521***	-.010	-.176**	-.289***	-.456***	-.345***	-.501**
	(.136)	(.066)	(.088)	(.069)	(.093)	(.093)	(.244)

- Municipality between 10,000 and 50,000 inhabitants	-.878***	-.0637	-.136*	-.371***	-.541***	-.364***	-.549**
	(.125)	(.056)	(.081)	(.063)	(.086)	(.086)	(.231)
- Municipality between 2,000 and 10,000 inhabitants	-1.055***	-.0730	-.319***	-.454***	-.639***	-.483***	-.359
	(.127)	(.060)	(.081)	(.063)	(.088)	(.087)	(.233)
- Municipality under 2,000 inhabitants	-1.131***	-.066	-.071	-.376***	-.575***	-.453***	-.012
	(.157)	(.0727)	(.105)	(.0754)	(.107)	(.103)	(.321)
Observations	15,223	15,107	15,157	15,175	15,155	15,160	15,223
R-squared	.113	.024	.044	.069	.133	.091	.087

Notes: [a] linear probability models; control for treatment status, after voucher introduction, all covariates reported in Table 3, year f.e., region f.e, year#region f.e.; [b] ordinary least square models; control for treatment status, after voucher introduction, all covariates reported in Table 3, year f.e., region f.e, year#region f.e; robust standard errors in parenthesis; *** p<0.01, ** p<0.05, * p<0.1.

Table A.3: CEM-weighted Difference in Difference estimates

	Cinema	Classical Concert	Non-classical concert	Theater	Museum	Monuments	Books	Online music/movies	Online books & eBooks
Consumption (dummy)[a]:									
β_3 Treatment x After voucher	**.051***	.023	**.044**	.008	.011	.005	**.042**	.012	**.074***
	(.015)	(.014)	(.020)	(.017)	(.019)	(.018)	(.019)	(.012)	(.014)
Observations	15,156	15,042	15,092	15,108	15,089	15,094	15,156	15,458	15,458
R-squared	.084	.034	.054	.097	.182	.133	.164	.036	.092
Placebo voucher:									
β_3 Treatment x After voucher	*-.007*	*.021*	*-.012*	*.023*	*-.007*	*-.013*	*.008*	*.009*	*-.004*
	(.016)	*(.018)*	*(.024)*	*(.020)*	*(.022)*	*(.021)*	*(.023)*	*(.011)*	*(.014)*
Consumption (# events, zero incl.)[b]:									
β_3 Treatment x After voucher	**.561***	.093	.166*	.070	.032	.003	-.386		
	(.135)	(.061)	(.088)	(.059)	(.087)	(.088)	(.250)		
Observations	15,156	15,042	15,092	15,108	15,089	15,094	15,156		
R-squared	.107	.026	.045	.069	.134	.094	.085		
Placebo voucher:									
β_3 Treatment x After voucher	*-.163*	*.040*	*-.109*	*.015*	*-.058*	*-.015*	*.008*		
	(.168)	*(.071)*	*(.124)*	*(0.070)*	*(.102)*	*(.095)*	*(.258)*		
Parallel trends test (number of events):									
δ_3 Treatment x Year	-.069	.012	-.016	-.000	-.028	-.027	-.031		
	(.084)	(.030)	(.051)	(.034)	(.051)	(.045)	(.132)		
δ_3 Treatment x Year, with covariates	-.062	.015	-.016	.003	-.024	-.021	-.020		
	(.082)	(.030)	(.052)	(.033)	(.049)	(.043)	(.130)		

Notes: [a] linear probability models; control for treatment status, after voucher introduction, all covariates reported in Table 3, year f.e., region f.e, year#region f.e.; [b] ordinary least square models; control for treatment status, after voucher introduction, all covariates reported in Table 3, year f.e., region f.e, year#region f.e; robust standard errors in parenthesis; *** p<0.01, ** p<0.05, * p<0.1.

Table A4: Descriptive statistics by SES: treatment and control groups, before and after the 18app voucher

	High SES group				Low SES group			
	Treat. before	*Controll before*	Treat. After	Controll after	Treat. before	Controll before	Treat. after	Controll after
	Mean	*Mean*	*Mean*	*Mean*	*Mean*	*Mean*	*Mean*	*Mean*
Consumption (dummy)								
Cinema	.905	.897	.875	.854	.823	.807	.839	.781
Classical concert/opera	.199	.195	.187	.213	.114	.120	.149	.135
Non-classical concert	.518	.537	.501	.527	.402	.419	.423	.417
Theater	.409	.315	.336	.276	.230	.158	.235	.148
Museum	.612	.560	.642	.629	.370	.292	.435	.347
Monument	.454	.429	.492	.525	.260	.216	.311	.263
Books read	.644	.645	.682	.667	.464	.436	.517	.419
Online & eBooks	.130	.160	.300	.240	.070	.077	.178	.116
Online music & films	.070	.060	.110	.090	.050	.044	.091	.069
Consumption (# of events, incl. zero)								
Cinema	4.766	4.991	4.171	4.040	3.800	3.966	3.679	3.439
Classical concert/opera	.711	.658	.582	.678	.359	.390	.5100	.413
Non-classical concert	1.667	1.725	1.447	1.672	1.225	1.327	1.206	1.192
Theater	1.204	.967	1.002	.755	.6112	.473	.627	.414
Museum	2.297	1.952	2.253	2.233	1.145	.917	1.408	1.086
Monument	1.688	1.562	1.869	1.977	.842	.710	1.098	.882
Books read	4.535	4.160	4.641	5.006	2.814	2.442	3.069	2.572