

The AGCOM inquiry on digital platforms and online information

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Introduction

- Platforms play a key role in the online information system as main distributors, if not gatekeepers, for access to news and editorial media contents
- Internet giants like Facebook and Google, as well as minor application providers, have achieved extremely significant turnover based on business models which involve the collection and commercial use of (often personal) data, such as online advertising
- This has spurred new discussions about the role of data in economic relationships among publishers, Internet platforms and end-users, as a factor to establish market power and, therefore, affect media pluralisms

These considerations have inspired the AGCom industry inquiry on «Digital platforms and online information» which follows a number of similar initiatives and studies conducted by Economic and Statistical Department to better understand evolution of information and media in the Internet era, and its policy implications

An overview of the AGCom inquiry

With its Deliberation No. 309/16/CONS, AGCom has launched its industry inquiry on “**Digital platforms and online information**”, which focuses on:

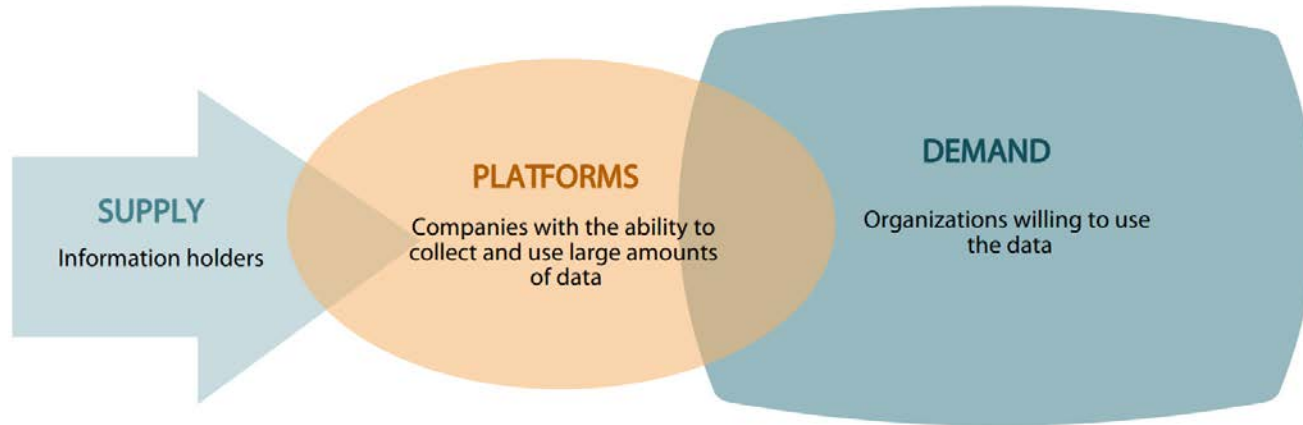
1. Describing information consumption dynamics and the role of digital platforms in the emerging **hybrid media system** (cooperation with the **Reuters Institute for the Study of Journalism** and consumer survey on the consumption behaviour of Italian Internet users, which involves an ad hoc field study regarding local and national news based on a 12.000 sample of individuals)
2. Studying the **diffusion of hard (and fake) news** among all media outlets (cooperation with «La Sapienza» University of Rome)
3. Starting point: Analysis of the market of **personal data**

The relevance of personal data

- Personal data are an important asset in today's data-driven society
- Thanks to the exponential increase in processing speed, computing storage, *especially mobile data* collection forms, issues on personal data becomes fundamental
- Internet companies, for example, usually provide free services in return for valuable sensitive information from users, which they exploit and sometimes sell to third parties
- But as individuals become more aware of the use of their data by organizations, of the potential consequences of disclosure, and of the economic value of their personal information, there is a need to compensate them directly
- In fact, personal data has value to both: its owner and to organizations who would like to use it

Is there a market for personal data?

The relevance of personal data



Market failures to overcome

- The presence of asymmetric information: supply and demand side – or at least one – could not be completely aware that this market exists and/or how it works.
 - Especially internet users are not aware of the use of the information they provide and the consequences this has for them: for example, users do not know that their personal information could be used and passed to third party
- The market is incomplete, so that it fails

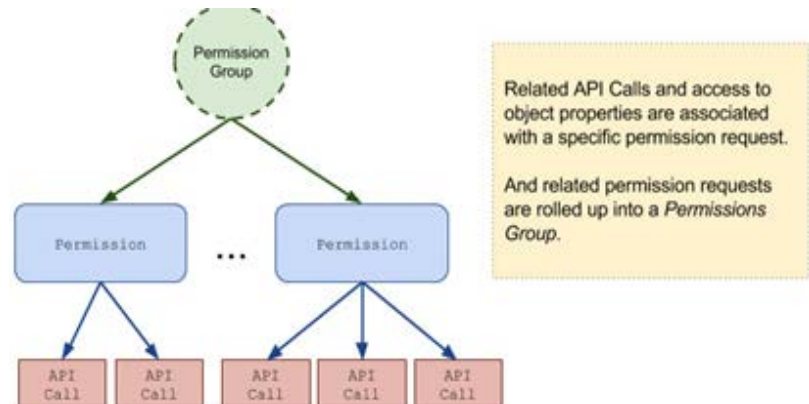
APPs Market

A market solution: Google Play Privacy permissions system

- Google Play (or Android operating system) uses permissions to alert users to privacy - or security – concerns: the permissions system regulate how APPs access protected users resources
- Permissions are split into different groups

Permission group	
CALENDAR	Used for runtime permissions related to user's calendar.
CAMERA	Used for permissions that are associated with accessing camera or capturing images/video from the device.
CONTACTS	Used for runtime permissions related to contacts and profiles on this device.
LOCATION	Used for permissions that allow accessing the device location.
MICROPHONE	Used for permissions that are associated with accessing microphone audio from the device.
PHONE	Used for permissions that are associated telephony features.
SENSORS	Used for permissions that are associated with accessing camera or capturing images/video from the device.
SMS	Used for runtime permissions related to user's SMS messages.
STORAGE	Used for runtime permissions related to the shared external storage.

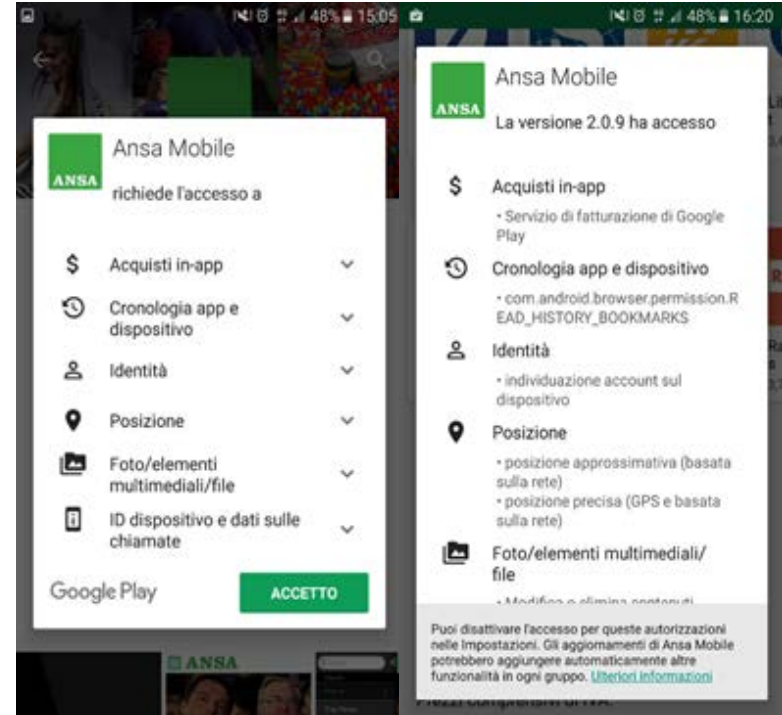
- Each group can contains many specific permissions
- Lots of unnecessary application permissions are approved



APPS Market

The End User License Agreement (EULA)

- When a user initiates the process of installing an APP, is shown the list of permission categories that the application requests (1)
- More information on permissions are available by tapping on “More detail” (2)
- Users’ option:
 - tap **AGREE** to continue with the APP installation
 - tap **CANCEL** to stop the APP installation



(1)

(2)

APPs Market

Research question:

What kind of relationship we have between APPs - demand and supply – and the number of permission? Especially permissions dealing with personal data

- Need of a better classification of these permission:
 - Pew Research classification (*user info vs. hardware*)
 - Kummer e Schulte (2016) create a dummy variable which embodies permissions that concerning privacy issues
 - Google/Android classification in dangerous and normal permissions

Pew Research Center (2015), *Apps Permissions in the Google Play Store*, www.pewinternet.org

Kummer M. E., Schulte P., (2016); *When private information settles the bill: money and privacy in Google's market for smartphone applications*, ECONSTOR

APPs Market

Dataset description

- Information on 1,135,700 *Google Play* APPs present on the store in 2015
- ≈80% of the available APPs
- 266 specific permissions

- single APP information:
 - *price*
 - *number of downloads*
 - *category*
 - *number and type of permissions*
 - *user rating*

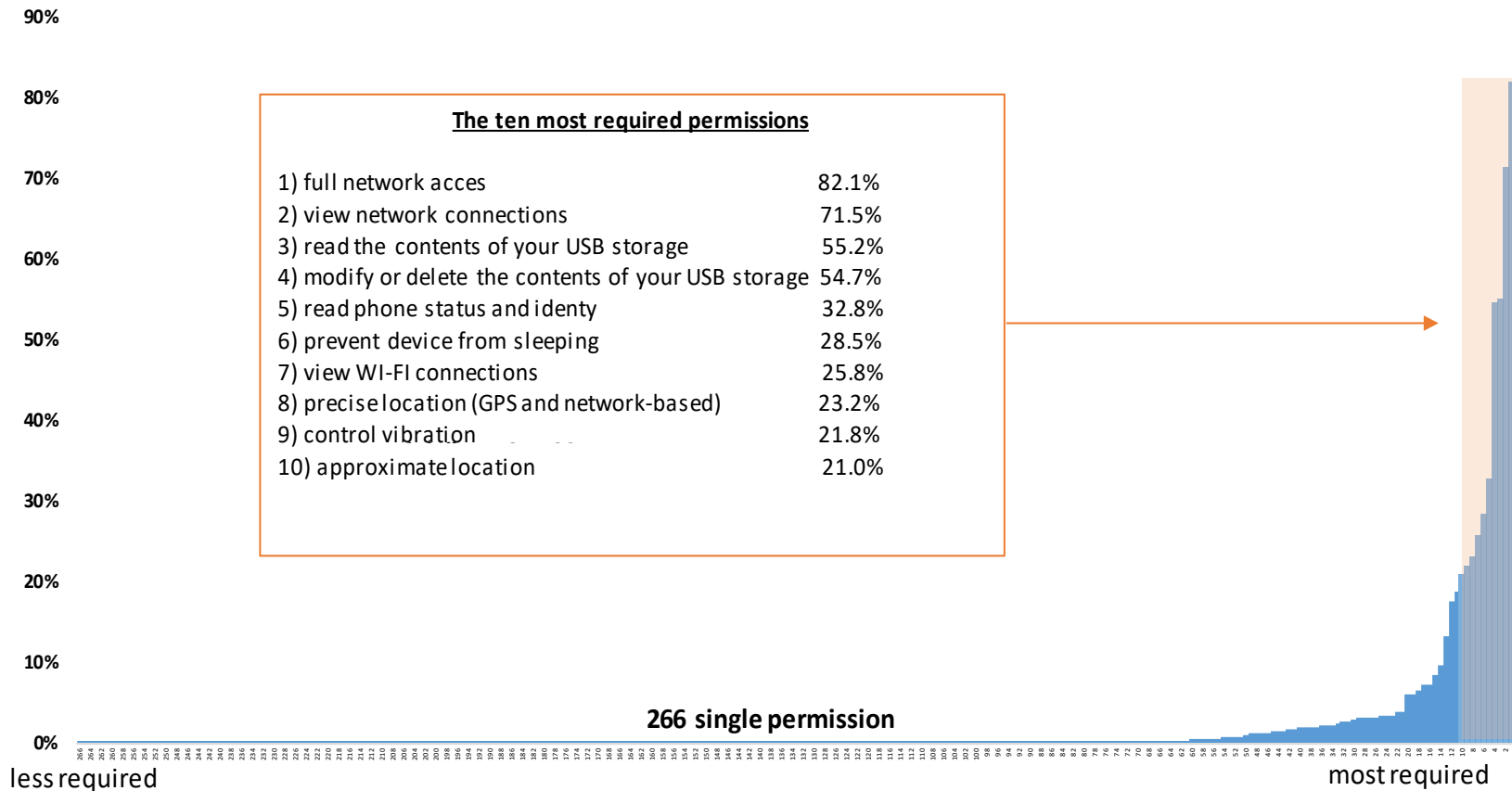
APPs by categories

Categories	# of APPs	%
Games	228,823	20.2
Education	100,293	8.83
Tools	82,799	7.29
Entertainment	80,915	7.12
Lifestyle	79,158	6.97
Personalization	72,457	6.38
Business	64,551	5.68
Books & Reference	59,990	5.28
Travel & Local	49,093	4.32
Music & Audio	41,793	3.68
Productivity	33,821	2.98
News & Magazines	33,002	2.91
Health & Fitness	32,844	2.89
Finance	25,793	2.27
Communication	25,462	2.24
Social	22,246	1.96
Shopping	19,039	1.68
Transportation	17,618	1.55
Photography	16,859	1.48
Medical	16,646	1.47
Media & Video	14,843	1.31
Family	6,313	0.56
Weather	4,632	0.41
Comics	3,460	0.3
Libraries & Demo	3,250	0.29
Total	1,135,700	100

APPs Market

Main results

○ Permissions distribution among APPs



APPs Market

Main results

- Free vs. paid APPs: difference in average number of permissions

	# of APPs	% of total	average # of permissions
Free APPs	977,244	86%	6.4
Paid APPs	158,456	14%	3.8
Total	1,135,700	100%	6.0

APPs Market

Main results

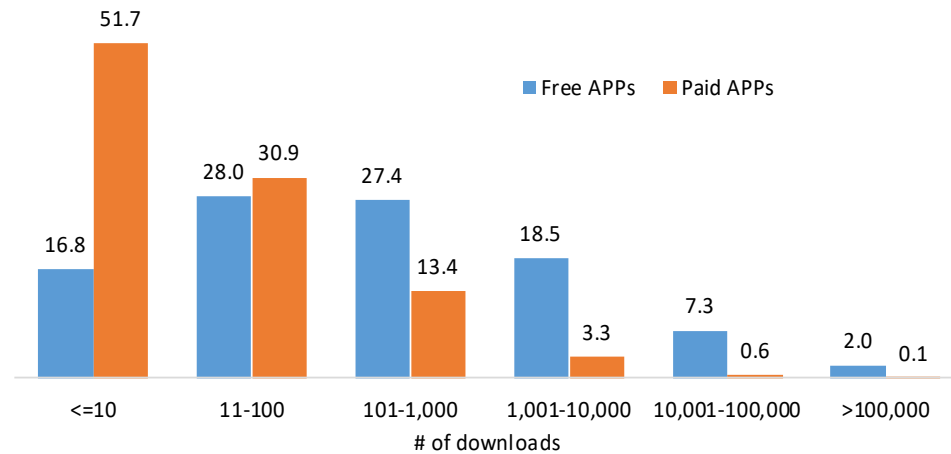
- Free vs. paid APPs: difference in average number of privacy-sensitive permissions

	average # of privacy-sensitive permissions		
	Pew Research	Google	Hummer e Schulte
Free APPs	8.1	7.1	9.7
Paid APPs	6.1	5.4	7.2

APPs Market

Main results

- Free vs. paid APPs: difference in average number of download



APPs Market

Main results

- The correlation of the number of permissions with users APPs demand

Dependent variable: log. Of installations	Model A: <i>Pew Research classification</i>	Model B: <i>Google classification</i>	Model C: <i>Kummer and Schulte</i>
User information permissions	-0.05*** (0.00)		
Dangeorus permissions		-0.01*** (0.00)	
Full Internet access permissions			0.07*** (0.00)
View network state permissions			-0.13*** (0.00)
Phone state permissions (read phone state and ID)			0.07*** (0.00)
Location permissions (Gps)			-0.05*** (0.00)
Communication permissions (read sms, intercept outgoing calls, ecc.)			-0.10*** (0.00)
Users profile permissions			-0.02*** (0.00)
Other permissions			-0.06*** (0.01)
Constant	1.95*** (0.02)	1.92*** (0.02)	2.00*** (0.03)
Controls	Yes	Yes	Yes
Categories	Yes	Yes	Yes
Adjusted R ²	0.84	0.84	0.84
# of observations	1,135,700	1,135,700	1,135,700

Heteroskedasticity-robust standar errors in brackets. ***, **, * significantly different from 0 at 1%, 5% and 10% levels, respectively

APPs Market

Main results ○ The correlation of the number of permissions with developer price strategies

Dependent variable: APPs price	Model A: <i>Pew Research classification</i>	Model B: <i>Google classification</i>	Model C: <i>Kummer and Schulte</i>
User information permissions	-0.26*** (0.00)		
Dangeorus permissions		-0.67*** (0.00)	
Full Internet access permissions			-0.41*** (0.01)
View network state permissions			-0.55*** (0.00)
Phone state permissions (read phone state and ID)			0.09*** (0.00)
Location permissions (Gps)			-0.30*** (0.01)
Communication permissions (read sms, intercept outgoing calls, ecc.)			0.01 (0.01)
Users profile permissions			-0.00 (0.01)
Other permissions			-0.03 (0.02)
Constant	-0.33*** (0.03)	0.08** (0.03)	0.29*** (0.04)
Controls	Yes	Yes	Yes
Categories	Yes	Yes	Yes
Adjusted R ²	0.14	0.16	0.21
# of observations	1,135,700	1,135,700	1,135,700

Heteroskedasticity-robust standar errors in brackets. ***, **, * significantly different from 0 at 1%, 5% and 10% levels, respectively

APPs Market

Main results

- The most downloaded APPs are also those that require a greater number of privacy sensible permissions
- APPs price fall when the number of permissions rise



Through the permissions system, platforms and developers are able to monetize personal data

It emerges clearly that there is an exchange between APP users and developers; however, this is an implicit exchange that does not provide the payment of a price

Conclusions

- Preliminary results and analysis of the AGCom inquiry on “Digital platforms and online information” provide relevant inputs in terms of the role of big data and their media policy implications
- Different types of secondary uses of data by digital platforms make the structure of the digital information ecosystem different from that of the other media, however financed by online advertising revenues
- By observing the commercial relations by which data are exchanged between the different economic actors in the online information system it can be inferred that the big data market is incomplete

Thank you!