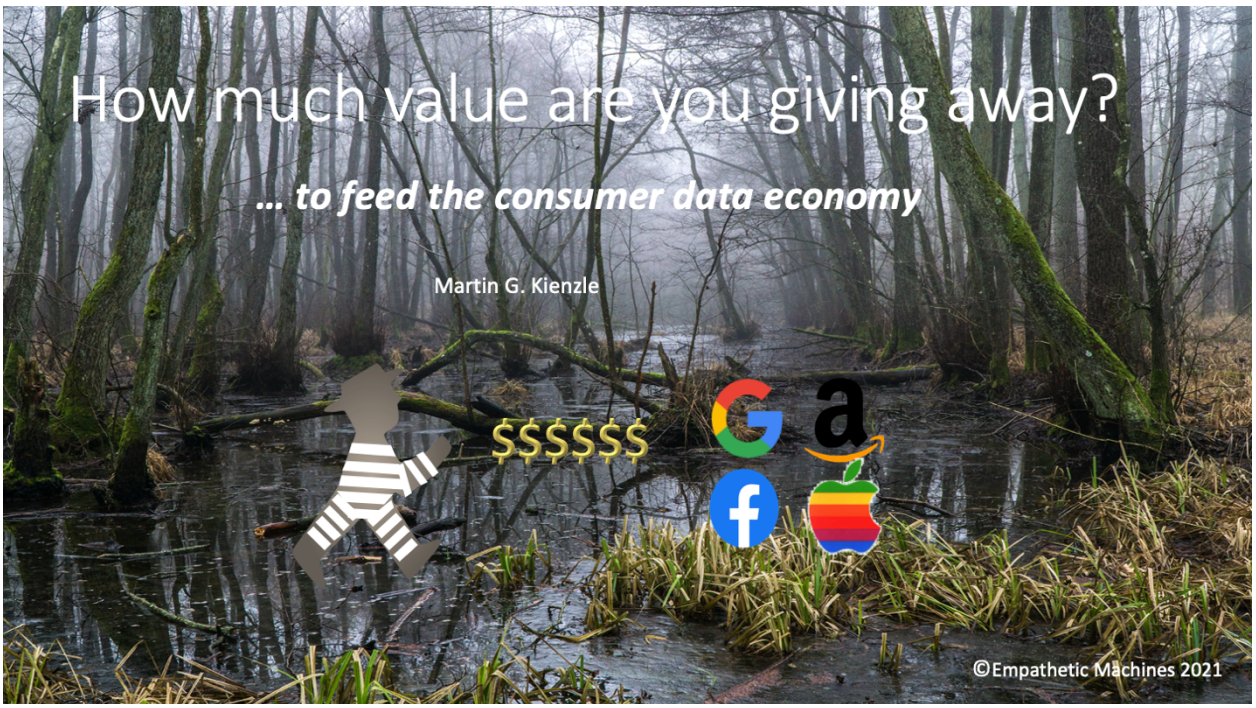

How much value are you giving away?

Despite, or possibly because of, the absence of an effective consumer-side data market, many approaches to value consumer data are being explored. They are yielding an astonishing range of potential answers.

Average revenue per user (ARPU)

Average revenue per user (ARPU)[1] is a standard business measure originating in the telecom industry. More recently, ARPU has become applied to digital services companies as well. ARPU is calculated by dividing a company's entire revenue by the number of users.

Some tech companies, for instance, Apple or Amazon, use extensive physical inputs. For such companies, it's difficult to tease out the impact of data on their revenue. Their ARPU is not useful to evaluate the contribution of data to their revenue.

Companies such as Google and Facebook, however, base their revenue almost solely on consumer data. For them, ARPU is a meaningful measure of the value created from consumer data. A recent report [2]shows Google's 2018 US ARPU at $256 / yr, with Facebook's US and Canada ARPU at $112 /yr not far behind. If we could add up the ARPU of all services based on consumer data, the total value would probably pass $1000.

To establish the value of the data component of the ARPU, the services' operating cost must be subtracted. Advertising that is not personalized also contributes to the ARPU. A study[3] suggests that "*… opt-out user ads fetch 52.0% less revenue on the exchange than do comparable ads for users who allow behavioral targeting.*" Another recent study[4] by Facebook confirms a 50% efficiency loss of non-personalized ads. Consequently, a rough estimate of the data component of the ARPU is about *50% of (ARPU –operating cost per user).* Given the rapidly declining operating cost and the increasing profit margins of the leading services, the data component of their ARPU must be sizable, if still hard to quantify.

Opportunity cost of using Internet services

The opportunity cost[5] of an activity is the "*forgone benefit that would have been derived by an option not chosen*". For instance, the opportunity loss of attending a football game is the amount of money that could have been earned by going to work instead. Naturally, there are many enjoyable ways to spend time other than going to work.

Sometimes, the social media economy is called the *attention economy*[6]. In that view, the opportunity cost is the value of consumers' attention. Defining the value of consumer data as the opportunity cost of using digital services yields remarkably high values.

One 2019 report[7] arrives at this estimate: "*A conservative estimate from a couple of years back suggests that users spend about 20 hours a month on Facebook. Since the current average wage is $27.71, this calculation indicates that people roughly value the site by about $6600 over the entire year*."

A more detailed academic study[8] of 2017 data uses an economic concept called *consumer willingness to accept (WTA), "the monetary compensation needed to compensate for losing access to various goods"*. The study reports that people in the US would ask to receive $17,530 for giving up search engines for a year, and $8,414 for giving up e-mail, among other services! The $25,944 for just these two services represent about 40% of the median 2017 US pre-tax household income[9] of $63,761! This begs the question whether WTA is a realistic way to assess the value of consumer data. Just for one comparison, let's look at replacement cost. The 2020 cost for one year of a personal e-mail service (personal DNS domain + privacy protection + hosting of 5 e-mail addresses) is about $135. Finding an alternative for search, though, would be more difficult[10].

Advertising

A great deal of the value of consumer data is derived from targeted advertising. The total 2019 advertising spending in the US is estimated[11] to be $328B, with $129B accounting for digital advertising. Considering the 278M US residents[12] older than ten years as advertising targets yields $464 digital advertising spend per person. Most digital advertisements are personalized.

Estimating the consumer data value contribution as above -- 50% (ad spend –operating cost per user) -- would result in about $200 / yr.

Data brokers

Once data has been collected, some of it is being traded on the business-side data market in a vast network of data brokers[13], a $200B global industry[14]. Assuming that half of that industry is US-based results in an industry volume of $360 / person older than ten years.
The per-person cost[15] of an individual data transaction, for instance for a single ad, is quite low, about $0.15 for a male, and about $0.14 for a female. However, the total number of transactions is very high. An interesting detail in the study shows how individual consumer attributes such as age and income contribute to the price.

An example of long term value of consumer data is an estimate[16] that an ***e-mail address*** is worth on average $89 to a brand over time, less for retail ($84) and more for a travel brand ($251). No wonder it's so hard to stop junk mail! Many web sites require an e-mail address to provide "free" information, extracting a substantial value! The volume of junk mail we all receive reflects the value of those addresses combined with our profiles!

Looking at the cost of *customer acquisition*, the purchase of Linkedin by Microsoft[17] shows an even higher value: "*Globally, LinkedIn had 433 million registered users and approximately 100 million active users per month before the acquisition. Simple arithmetic tells us that Microsoft paid about $260 per monthly active user.*"

Data protection services

While individual consumers have almost no power in the consumer-side data market, small companies are trying to change that by aggregating consumer requests to remove their data from data brokers' databases. The price these companies are charging is a proxy for consumer data value. Here are some examples

Service	Databases addressed	Annual cost
DeleteMe	30	$129
PrivacyDuck basic	91	$499
PrivacyDuck VIP	190	$999

These prices indicate how consumers value their privacy, providing a supplier perspective of the consumer-side data market.

Big tech buying data from consumers

In addition to sweeping up data from consumers' interactions with their services, Amazon and Google are paying consumers to give them data above and beyond their service transactions. What looks at first like a benefit to consumers is in fact a clever market research program to find precise data to attack whatever competitors are left! At the same time, though, these programs are a measure of consumer data value.

Amazon[18] has started to pay consumers for data about purchases they made from stores other than Amazon. People can receive $10 every month in which they send Amazon 10 receipts for non-Amazon purchases. As most people will send photos taken with their mobile phones, the image metadata contains additional information, such as the phone used and the location where the images were taken. Consumers also can earn rewards for answering surveys. However, those "rewards" for the submitted receipts and survey answers are not unrestricted cash: they can only be used to cover an Amazon balance or for charity.

Google[19] also has a program to reward people for answering surveys. The frequency of the surveys depends on the profile of the people taking them and on the value of the data they provide. In Google's case, though, people can reap their rewards as cash through Paypal, in addition to applying them in the Google play store.

Discounted product bundles

Yet another approach to determine the value of consumer data is to look at how adding Alexa data collection to product bundles reduces their cost. In December 2019, NY Times Wirecutter listed some discounts[20] in which buying smart home devices combined with Alexa results in prices lower than without it. Here's a sample:

Bundle	**Street price**	**Deal price**	**Alexa Data Discount**	
			$	%
Ring video doorbell pro + Chime Pro + Echo Show 5	$300	$180	$120	40%
Lutron Caseta wireless smart lighting dimmer switch starter kit	$100	$80	$20	20%
Wemo mini smart outlet	$25	$16	$9	36%
iRobot Roomba 675	$270	$200	$70	26%
SimpliSafe home security system - essentials kit	$260	$130	$130	50%

Consumer data value – summing up

Reviewing all these approaches to value consumer data, it appears a sure bet that its aggregate value is at a minimum $500 per person per year, and likely higher than $1000 per year. What's missing is a comprehensive and efficient market to let consumers participate in that value.

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[1] https://corporatefinanceinstitute.com/resources/knowledge/accounting/average-revenue-per-user-arpu/
[2] https://mondaynote.com/the-arpus-of-the-big-four-dwarf-everybody-else-e5b02a579ed3
[3] https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3020503
[4] https://developers.facebook.com/blog/post/2020/06/18/value-of-personalized-ads-thriving-app-ecosystem/
[5] https://www.investopedia.com/terms/o/opportunitycost.asp
[6] https://econreview.berkeley.edu/paying-attention-the-attention-economy/
[7] https://www.americanactionforum.org/insight/a-dive-into-digital-dividends/
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