

# Consumer Decision Making in the Information Age

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## Abstract

Providing people with more information and more options may seem as a good policy. However, because of limited attention and cognitive resources, people are not able to use all available information and freedom of choice effectively to achieve their own best interests. When cognitive resources and attention are depleted, decision making becomes shallow and intuitive, often unable to take important aspects of given situations into account – even though this information is readily available. An intuitive decision making may lead to suboptimal outcomes by overestimating the importance of the most salient cues and disregarding the less obvious future consequences. Although this creates a demand for decision making aides that could be satisfied by markets, policy regulation may be necessary in some areas. We provide specific examples of problems arising from limited attention together with solutions based on behavioral economics approach to policy making known as *nudging*.

**Keywords** Limited attention · Cognitive biases · Information asymmetry · Libertarian paternalism · Nudging

**JEL Classification** D03 · D82

At a first glance, if better decision making requires more information, and there is more information (aka Information Age), one cannot help but conclude that decision making can only get better. But at anything beyond the first glance the reality may be more nuanced: while the oft-invoked concept of *limited attention* is a bit pleonastic (the attention is by its very nature limited), it does provide us with a nice starting point in highlighting problems faced by consumers who must process ever growing volume of information coming from a wide range of competing sources.

There are millions of products available on store shelves nowadays. Even an ordinary supermarket offers about 40 thousand different articles. In contrast average household can cover a major part of its consumption by using only approximately 150 products, which means that it must filter out the residual of 39,850 kinds of products most of the time (Trout 2005). The extreme but frequently studied inability to effectively discriminate between alternatives is known as a decision overload or the paradox of choice (Iyengar and Lepper 2000; Schwartz 2005). A state of mind, in which the possible choices are so abundant that the consumers' motivation to choose is significantly reduced, can lead to lower product satisfaction, disappointment or even to a complete inability to decide. Such intensive decision-making paralysis is rather rare (Scheibehenne et al. 2010). More frequently, consequences of the limited attention can be observed when customers underestimate or overlook information with imminent impact on the quality or purchase price of a product or service.

Typical examples are goods with shrouded attributes (Gabaix and Laibson 2006). For example, manufacturers of printers offer cheap products, but do not inform customers about the prices of costly patented ink cartridges (for which the total costs exceed price of the printer about 10 times over the lifetime of the product) and in fact customers are not able to calculate the price of printing at the time they buy their

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printers. Banks advertise the benefits of their accounts, but do not promote the full range of charges and fees associated with them. Banking and financial sectors have an especially high incentive to sell complex and confusing products. In an environment of myopic, unsophisticated customers financial firms achieve extra profit because customers pay higher transaction fees for lower product yield (Célérier and Vallée 2014; Stango and Zinman 2009).

There are many other ways in which limited attention affects decision-making (Houdek 2016). For example, buyers focus primarily on digits of prices which are on the left and they pay less attention to digits on the right – so called “left-digit bias”. The bias has a potential to cause significant losses when prices create salient “break-points”. Using American used cars market data Lacetera, Pope, and Sydnor found that “cars with odometer values between 79,900 and 79,999 miles are sold on average for approximately \$210 more than cars with odometer values between 80,000 and 80,100 miles, but for only \$10 less than cars with odometer readings between 79,800 and 79,899” (2012, p. 2207). The exact same pattern was identified on German used cars market too (Englmaier et al. 2013). Englmaier et al. additionally discovered that customers pay higher attention to the year of first registration than to the date of registration (*ceteris paribus*, cars manufactured in January are sold for a higher price than cars from December of the previous year while the similar variation is not observed between months within one year).

Numerous other studies have demonstrated that consumers pay only limited attention to important product characteristics or price. When a household starts paying via automatic bill payment for energy residential electricity consumption increases (Sexton 2014). Consumers underestimate the costs of transportation and packaging (Brown et al. 2010; Hossain and Morgan 2006). They misjudge prices of grocery store products when taxes are excluded from price tags and the total price is paid at the counter (Chetty et al. 2009; Goldin and Homonoff 2013; Houdek and Koblovský 2015). Buyers are influenced and easily manipulated by irrelevant and/or outdated stimuli that attract their attention (Ariely et al. 2003; Simmons-Mosley and Malpezzi 2006), or buy insurance only based on temporarily salient risks (Browne and Hoyt 2000); for other examples see Bordalo et al. (2013) or Dellavigna (2009, sec. “Conclusion” 2).

Presented findings document how even overabundant amount of information can lead to suboptimal decision when attention as a resource is limited. In the next section, the article continues by discussion of cognitive mechanisms responsible for biased information processing, attention depletion, and the impact of both phenomena on quality of consumer choice. The section “Behaviorally Informed Policies” is devoted to discussion of market forces and economic and technological innovations that contribute to mitigation of information asymmetry and creation of more easily navigable markets for

consumers. However, we argue that firms will be still able to (ab)use limited attention of consumers for their own benefits. In section “Conclusion”, we therefore propose solutions inspired by the behaviorally informed policy (Thaler and Sunstein 2008), which would restrict these exploitative strategies, and which would generally mitigate negative aspects of limited attention. The conclusion is devoted to the summary of benefits and costs of proposed solutions and suggestions for further research.

## The Cognitive Basis of Limited Attention

Lay people as well as some traditional economists consider cognitive processes costless and instantaneous. Because of this, people routinely overestimate the capacity of human attention: they commonly believe that when some essential information is easily available, they would immediately and reliably notice it and use it. However, even a dramatic event such as swapping one person for a different one during a conversation can easily escape one’s attention. In a field study by Simons and Levin (1998), a researcher approached a pedestrian on a university campus asking for directions. While the pedestrian was explaining the way to the researcher, two other confederates carrying a door walked between them, interrupting their conversation and momentarily blocking the view. As they were passing, one confederate switched place with the researcher who had originally asked for directions. When a different group of people was asked to estimate the proportion of those who would notice such swap, their average answer was 100% (Levin et al. 2002). Only less than a half of the pedestrians (46%) noticed the swap.

But perhaps the most striking demonstration of this so-called *inattentional blindness* comes from a study in which 24 radiologists were asked to examine a series of scan images looking for signs of possible tumors. Only four radiologists have noticed that an image of gorilla was presented on the last scan. Others have missed the gorilla completely – although an eye-tracker camera showed they had looked directly at it (Drew et al. 2013).

These and many similar findings show several things about the nature of human attention: First, human attention is a scarce resource – it simply is not possible to focus on everything that is occurring around us. Secondly, things outside of our attentional focus are virtually non-existent for us, even when they are directly in front of our eyes. And finally, we do not pay attention to unexpected things or to things that are dissimilar to things on which we are currently focusing our attention (Simons and Levin 1998).

The attention allocation is usually intuitive and automatic. Most of the time, people are in a sort of stand-by mode: they are not deeply focused on anything in particular and they perceive only the most basic and salient aspects of their

surroundings. This setting is probably adaptive from an evolutionary perspective as it allows people to perform routine tasks without excessive effort and to quickly react to possible emerging threats, signaled by a sudden movement or sound. People are also able to consciously focus their attention on a specific task. Then they can take even less salient and not obviously important aspects (e.g. future consequences, complex features, etc.) of the given situation into consideration. This is, however, much more energetically taxing, as an effort must be made to suppress possible distractors and actively look for non-obvious features and not-easily-available information regarding the task in question (Pocheptsova et al. 2009).

More importantly, according to current cognitive theories, people have at their disposal only a limited amount of self-control that can be used for attention management (Baumeister et al. 1998). Once all available self-control is depleted, attention cannot be focused very well. People then become distracted more easily and their decision-making falls under the influence of intuitive processes guided by only the most salient features of a given situation (Pocheptsova et al. 2009). Less obvious aspects such as hidden taxes, fees and add-ons paid in the future or health consequences are as “invisible” for them as the gorilla on a medical scan mentioned above. As a result, performance of any complex decision-making task suffers.

Results from a study by Vohs and colleagues (Vohs et al. 2008) suggest that even a simple activity of making choices (between consumer goods or college courses) can deplete self-control. Therefore, it seems that the sole presence of many information sources and options between which people have to constantly choose impairs the following information processing and further decision making. This can easily lead to a vicious cycle because suboptimal decisions lead to worse outcomes, less cognitive resources in the future and less sophisticated attention management (Shah et al. 2012). However, the ego depletion findings are not fully replicable (Hagger et al. 2016).

## Market Solutions to Information Asymmetry

All instances of information asymmetry (IA) tend to leave some mutually beneficial transactions unexploited. This explains the existence of market forces – incentives for the very market participants – operating towards mitigating or eliminating the inefficiency caused by IA. It is in fact another margin of the entrepreneurial discovery process (e.g. Kirzner 1997). Much like the entrepreneurs search for the right product to offer, for the right distribution channel or packaging, they also search for ways of credibly informing their customers about the fact they are superior to competition. And while we typically think of *sellers* as the entrepreneurs, the

same process takes place among *buyers* as well as among *third parties* who see a frustrated beneficial transaction between (prospective) sellers and buyers as a market niche, as an entrepreneurial opportunity.

While all the three distinct groups have in the long run the same incentives, the level of actual discovery efforts corresponds to the degree to which they are aware of IA and its costs, and, of course, to the amount of entrepreneurial spirit and talents these groups have. Concentration of these qualities among sellers on most markets explains why such innovations are empirically more often coming from sellers rather than buyers. But all groups, we show below, have developed some ways of eliminating the negative effects of IA and were in this benefited by the information age.

The traditional quality signaling tools used by sellers such as brand names and various certifications and warranties (technical or satisfaction) were greatly complemented by the low cost of communication. It enabled sellers to disclose more effectively, to communicate information aimed at “educating” their customers. This intensifies competition and can make it harder for sellers to get away with “tricking” their customers by concealing information. Product comparisons can be made more complex, long-run and available to wider public (e.g. Feldman et al. 2007). On top of advantages based on mere cheaper communication, the current cheaper and better technology (e.g. vehicle telematics) enables some sellers to collect information on product-related behavior of their customers, mitigating moral hazards or outright fraud in insurance business, and on product markets as well (e.g. Ippisch 2010).

In a similar vein, the screening activities traditionally relied upon by buyers are greatly enhanced in their effectiveness by the low cost of communication. On innumerable web-based discussion fora, prospective buyers can now draw on experience of actual users of most products with a reasonable history on the market at costs close to zero (Amblee and Bui 2011). Moreover, information technology gives rise to innovations on the part of buyers that transcends the usual experience sharing. It is now possible to monitor actual contract performance much more closely. The use of agreed upon materials or technology procedures or the location in time, for example, can all be checked upon in real time or ex post (Dellarocas 2003; Lewis 2011; Resnick et al. 2006; Brustein 2013).

Third parties come in essentially as outside providers of signaling or screening, assisting either of the two parties to a transaction in activities mentioned above. And given the technological nature of the information age, it is the third parties whose scope of activities is most dramatically enlarged by its coming. Their original area of activity as independent testing/certifying agency, itself enhanced by an easier information dissemination and customer reach, expanded into territories and modes of business previously hard to imagine (Dewan and Hsu 2004).

First, the lower cost of information gathering created a space for third parties in products comparisons, which in turn became a natural environment and a platform for traditional information/experience sharing among users and prospective buyers, making it all the easier to find relevant information and, perhaps even more importantly, make sense of it. The seemingly minor innovation of rating users' experience or sellers' rating (e.g. the 5-star rating) dramatically improves the intelligibility of a review (Masum et al. 2012). Second, the information technology made it much easier for third parties to become effectively intermediaries between sellers and buyers. Innovations like eBay, Uber or AirBnB now make some previously non-existent transactions possible. And this is not only because the sellers and buyers would not typically know about each other, but, more importantly, because they provide both parties the necessary information about the other party (its rating) that reduces the risk of mutual engagement. While there is typically much heterogeneity and some biases in such feedback, it does not render it useless (e.g. Saeedi 2014), and platforms can and do learn from mistakes in their reputation mechanisms (Nosko and Tadelis 2015). And third, the ease and low cost of information flow in some cases blurs the traditional difference between business and private activity, which not only boosts competition, but puts both sides of the transaction on equal footing. Instead of a large hotel chain contracting with an odd one private customer, we have now transactions between an odd one customer and an odd one owner of an apartment (e.g. Zervas et al. 2015).

Now the effect of the information age on tools mentioned above has generally been a bifurcated one: a) the low cost of data collecting, searching and sorting has dramatically boosted their effectiveness, tending to eliminate many of the traditional IA concerns (Tabarrok and Cowen 2015), b) the information-rich environment in which these tools are used is congested and contains more noise leading to the information and choice overload, tending to exacerbate some IA-related concerns. While the net effect in each case is ultimately an empirical question, there is some reason for optimism. This is because b) feeds back into a). Any negative effect (choice overload, too many attributes, shrouded prices, too complex or misleading product information, incomprehensible contracts or even outright deception), to the extent it is recognizable as negative by market participants, creates an entrepreneurial opportunity one may cash on (e.g. no fine print policy, recommended products, comparative advertising).

Despite all the entrepreneurship and ingenuity, the market solutions of IA are far from perfect and complete. Insufficient competition or non-repeated nature of given business may cause the disciplining pressure on sellers to be insufficient to go all the way full disclosure and honesty. Even if there is such pressure, reaching perfection is likely to be too costly for the sellers. Finally, even if we assume the most optimistic scenarios on the part of the sellers, the way to perfection would be

ultimately thwarted by limited attention of the buyers we referred to above. On the other hand, perfection is a false benchmark (Demsetz 1969), and it has to be recognized that self-interest of market participant deploys a powerful antidote to IA.

Nonetheless, this is not to say (much less to prove) that spontaneous solutions achieved by market participants cannot be improved upon (assisted or catalyzed) by policy. When designing such policy, however, it must be borne in mind that its design and enforcement is itself costly (not least because it is likely to create IA problems of its own) and this cost must be carefully weighed against its perceived benefits. The traditional regulatory responses to IA have not been very careful at that (Winston 2007, pp. 27–60). The next section is then devoted to a discussion of policies better geared to pass this test.

## Behaviorally Informed Policies

As indicated, the information abundance may lead to suboptimal and costly choices for many (Campbell et al. 2011). Referring to the findings on suboptimal choices, legal scholars regularly suggest paternalistic regulations to minimize the consequences of certain alleged suboptimal choices (usually with an argument of the necessity to protect people). It goes without saying, many of such regulations limit the freedom of choice, distort the market and, most importantly, could cause unexpected and unpredictable consequences. Moreover, certain regulations which are created to "protect" individuals from their choices have a small or no effect or may even harm the consumers by creating a virtual feeling that the consumers are protected by the regulations (and by the state), which creates ground for a moral hazard. Also, protected consumers may have a higher difficulty to learn from their mistakes, which may eventually lead to losses of higher magnitude (Wright 2007).

However, there are ways to improve decision making even without taking away freedom of choice. Thaler and Sunstein (2003) suggested that the way choices are presented always influences decisions, even when there is no explicit intention to do so. As an example, they describe a cafeteria owner who must present items she is intending to sell in a certain arrangement and it is up to her which order she chooses. Although everybody can freely choose from the whole selection, the placement matters – items in the front and at the eye level are sold more often and in larger quantities compared to those in the rear or at the ankle level. Thaler and Sunstein asked whether a conscious cafeteria owner who has her customers' health in mind should not purposely place healthy items (fruits and vegetables) to the "best-selling" places and the unhealthy items (such as popcorn) to places where customers may still find them if they are looking for them. They called the concept of influencing choice process of people while simultaneously securing maximum freedom of choice *libertarian paternalism*.

and argued that even the state may adopt such approach to policy-making. Interventions designed in the spirit of libertarian paternalism are often called nudges because they are not meant to force people to make certain choices. Instead they are supposed just to gently push them in the desired direction.

It has been argued that for a nudge to be successful it should maintain freedom of choice, be transparent and be tested before being implemented (Thaler and Sunstein 2003). Additionally, designing nudges can benefit from following two rules: (1) Use of welfare-maximizing default options whenever it is possible (Zlatev et al. 2017). An illustrative example comes from the lack of organs available for transplantation in the US. It is most probably caused by a wrong choice of a default donor status – the default is not being an organ donor and people have to opt-in to become donors. In countries where the default is being a donor (with the possibility of opt-out), the organ donation is much less of a problem (Davidai et al. 2012). (2) Simplification and increases of ease and convenience – simple and easily understandable options are always preferred to complex choices. For example, a law required to provide maximum number of available choices for the US citizens who were choosing a package of prescription drugs covered by the medical insurance. This resulted in an overabundance of choices – the provided coverage plans offered from 40 to 160 option that were difficult to compare and evaluate. Naturally, under such circumstances, the elderly, who were supposed to be the primary beneficiaries of the plans, were confused and made suboptimal decisions or no decisions at all and 25% of them remained uncovered by any plan. Subsequently, some states passed a law that allowed random selection of a plan for unsubscribed individuals to boost the participation in the scheme. The idea was that after gaining experience with the randomly selected plan, people would later change the plan for one better suited for them. However, only a small number of people changed the plan which lead to further inefficiencies (Thaler and Sunstein 2008, pp. 159–170).

How can the described policy be improved? Thaler and Sunstein suggest several ways: first – automatic enrollment with intelligent assignment. Instead of random assignment of one of 140 plans, a person could be assigned a plan that fitted such person's drug intake in the last 3 months. By doing so, people would have most of their required drugs covered by the default plan (but they would still be able to change the plan if they decide to). Another option would be to sponsor development of a “drug calculator” which would – based on the drug intake data – indicate in a comprehensible way the most compatible plans. Such “calculator” would require the plan providers to regularly supply data about the plans in a unified manner to a database which should be made mandatory by policy-makers. Such reports – Thaler and Sunstein label them with an acronym RECAP (Record, Evaluate and Compare Alternative Prices) – would “greatly improve people's ability

to make good choices” (Thaler and Sunstein 2008, p. 94). Naturally, such calculators may be helpful in many instances where an identical or very similar product are difficult to compare and evaluate (such as gas, electricity and water supplies, credit cards, telecommunication, internet fees, etc.).

There are many other ways for the government to support market forces and tackle the problem of limited attention using reasonable defaults and requiring simplified disclosures in unified formats. An article by Thaler and Benartzi (2004) depicts a scheme that significantly improved retirement savings of employees (which are usually smaller than “optimal”) by a simple combination of automatic enrollment and automatic adjustments of deposits in case of salary increases. Regretfully, the Czech government was obviously unaware of this article when it passed the law on the second pension pillar (which introduced opt-in default and produced tens of pension funds, leading to confusion and low adoption rates and was eventually revoked). Using policies informed by these and similar insights from psychology provides ways to improve many aspects of people's lives ranging from health (Milkman et al. 2012) to financial literacy (Drexler et al. 2014).

However, not all nudges are successful. Mandatory calorie labeling of food adopted by most western jurisdictions serves as an example of such failure. These regulations were supposed to provide consumers with some useful guidelines on the calories intake. The purpose of the policy was to fight the most widespread western disease – obesity. However, obesity does not seem to have been tackled at all and at least with the calorie labels it is clear why – people keep ignoring them (Liu et al. 2014; Elbel et al. 2009; Finkelstein et al. 2011). Moreover, there are indications that some consumers (usually those who are the most endangered group) seek “best calorie deals”: when they are deciding between a two-dollar canned soup with 500 cal or one with 600 cal, they tend to opt for more calories for the money. Thus, people seem to use the provided information in a way that goes against the aim of the regulation. This shows that even theoretically well supported nudges sometimes fail, which makes the necessity to test them in controlled field experiments before their full implementation even more obvious.

## Conclusion

With communication becoming cheaper and easier, people are exposed to more and more information. At the same time, however, our ability to process the information with paying full attention stays rather limited. Thus, one may ask whether more information and wider portfolio of choices always improve our lives. We suggest that at some level people are incapable of making efficient decisions, efficiently identify and evaluate preferences and compare alternatives and options

hence eventually making suboptimal decisions. Suboptimal decisions result in dissatisfaction. On several real-life examples we show that the information overload may lead to such dissatisfaction.

Are there any ways to lower the suboptimality of our decision in the current world? We suggest that well-thought-through nudging – a recent approach to policy making, based on the work of Thaler and Sunstein (2003) – might be a promising start. Nudges being simple, cheap interventions aimed at helping people overcome their cognitive limitations in decision making do not directly limit freedom of choice in a way that bans, or taxes do. Moreover, they are usually very efficient as they primarily target intuitive processes and guide them in directions that lead to beneficial outcomes.

In general, policies based on nudging aim to complement decision-making processes with elements to that help people make intuitively the same decisions they would make if their cognitive resources were not limited. Alternatively, lowering the cognitive load by making interactions with institutions more intuitive may sometimes help people as well. When facing a difficult decision without sufficient cognitive capacity to carefully evaluate its every aspect, people often stick with the default option and a good policy will make this option welfare-maximizing. However, every such policy should be subject to long term testing as sometimes policies that appear efficient in a short run may eventually produce ineffective, practically irrelevant results with unforeseen side effects.

## Further Reading

- Amblee, N., & Bui, T. 2011. Harnessing the influence of social proof in online shopping: The effect of electronic word of mouth on sales of digital microproducts. *International Journal of Electronic Commerce*, 16(2), 91–114. <https://doi.org/10.2753/JEC1086-4415160205>.
- Ariely, D., Loewenstein, G., & Prelec, D. 2003. “Coherent arbitrariness”: Stable demand curves without stable preferences. *The Quarterly Journal of Economics*, 118(1), 73–106. <https://doi.org/10.1162/00335530360535153>.
- Baumeister, R. F., Bratslavsky, E., Muraven, M., & Tice, D. M. 1998. Ego depletion: Is the active self a limited resource? *Journal of Personality and Social Psychology*, 74(5), 1252–1265. <https://doi.org/10.1037/0022-3514.74.5.1252>.
- Bordalo, P., Gennaioli, N., & Shleifer, A. 2013. Salience and consumer choice. *Journal of Political Economy*, 121(5), 803–843. <https://doi.org/10.1086/673885>.
- Brown, J., Hossain, T., & Morgan, J. 2010. Shrouded attributes and information suppression: Evidence from the field. *The Quarterly Journal of Economics*, 125(2), 859–876. <https://doi.org/10.1162/qjec.2010.125.2.859>.
- Browne, M. J., & Hoyt, R. E. 2000. The demand for flood insurance: Empirical evidence. *Journal of Risk and Uncertainty*, 20(3), 291–306. <https://doi.org/10.1023/A:1007823631497>.
- Brustein, J. 2013. The case for wearing productivity sensors on the job. *Bloomberg Business*. [online]. [cit. 2015-06-19]. Available: <http://www.bloomberg.com/bw/articles/2013-12-19/sociometric-solutions-ben-waber-on-workers-wearing-sensors>
- Campbell, J. Y., Jackson, H. E., Madrian, B. C., & Tufano, P. 2011. Consumer financial protection. *Journal of Economic Perspectives*, 25(1), 91–114. <https://doi.org/10.1257/jep.25.1.91>.
- Célerier, C., & Vallée, B. 2014. *The Motives for Financial Complexity: An Empirical Investigation*. HBS working paper. Available: <http://ibhf.comell.edu/docs/Symposium%20Papers/FinancialComplexity.pdf>
- Chetty, R., Looney, A., & Kroft, K. 2009. Salience and taxation: Theory and evidence. *American Economic Review*, 99(4), 1145–1177. <https://doi.org/10.1257/aer.99.4.1145>.
- Davidai, S., Gilovich, T., & Ross, L. D. 2012. The meaning of default options for potential organ donors. *Proceedings of the National Academy of Sciences*, 109(38), 15201–15205. <https://doi.org/10.1073/pnas.1211695109>.
- Dellarocas, C. 2003. The digitization of word of mouth: Promise and challenges of online feedback mechanisms. *Management Science*, 49(10), 1407–1424. <https://doi.org/10.1287/mnsc.49.10.1407.17308>.
- DellaVigna, S. 2009. Psychology and economics: Evidence from the field. *Journal of Economic Literature*, 47(2), 315–372. <https://doi.org/10.1257/jel.47.2.315>.
- Demsetz, H. 1969. Information and Efficiency: Another Viewpoint. *The Journal of Law and Economics*, 12(1), 1–22. <https://doi.org/10.1086/466657>.
- Dewan, S., & Hsu, V. 2004. Adverse selection in electronic markets: Evidence from online stamp auctions. *The Journal of Industrial Economics*, 52(4), 497–516. <https://doi.org/10.1111/j.0022-1821.2004.00237.x>.
- Drew, T., Vo, M. L. H., & Wolfe, J. M. 2013. The invisible gorilla strikes again sustained inattentional blindness in expert observers. *Psychological Science*, 24(9), 1848–1853. <https://doi.org/10.1177/0956797613479386>.
- Drexler, A., Fischer, G., & Schoar, A. 2014. Keeping it simple: Financial literacy and rules of thumb. *American Economic Journal: Applied Economics*, 6(2), 1–31. <https://doi.org/10.1257/app.6.2.1>.
- Elbel, B., Kersh, R., Brescull, V. L., & Dixon, L. B. 2009. Calorie labeling and food choices: A first look at the effects on low-income people in New York City. *Health Affairs*, 28(6), w1110–w1121. <https://doi.org/10.1377/hlthaff.28.6.w1110>.
- Englmaier, F., Schmöller, A., & Stowasser, T. 2013. Price discontinuities in an online used Car market. *EconStor working paper*. Available: <https://www.econstor.eu/handle/10419/79982>
- Feldman, R., Fresko, M., Goldenberg, J., Netzer, O., & Ungar, L. 2007. Extracting product comparisons from discussion boards. In proceedings of the *Seventh IEEE International Conference on Data Mining, ICDM*, 469–474. doi: <https://doi.org/10.1109/ICDM.2007.27>
- Finkelstein, E. A., Strombotne, K. L., Chan, N. L., & Krieger, J. 2011. Mandatory menu labeling in one fast-food chain in King County, Washington. *American Journal of Preventive Medicine*, 40(2), 122–127. <https://doi.org/10.1016/j.amepre.2010.10.019>.
- Gabaix, X., & Laibson, D. 2006. Shrouded attributes, consumer myopia, and information suppression in competitive markets. *Quarterly Journal of Economics*, 121(2), 505–540. <https://doi.org/10.1162/qjec.2006.121.2.505>.
- Goldin, J., & Homonoff, T. 2013. Smoke gets in your eyes: Cigarette tax salience and Regressivity. *American Economic Journal: Economic Policy*, 5(1), 302–336. <https://doi.org/10.1257/pol.5.1.302>.
- Hagger, M. S., Chatzisarantis, N. L., Alberts, H., Anggono, C. O., Battailler, C., Birt, A. R., et al. 2016. A multilab preregistered replication of the ego-depletion effect. *Perspectives on Psychological*

- Science, 11(4), 546–573. <https://doi.org/10.1177/1745691616652873>.
- Hossain, T., & Morgan, J. 2006...Plus shipping and handling: Revenue (non) equivalence in field experiments on eBay. *The BE Journal of Economic Analysis & Policy*, 5(2), 1–27. doi: <https://doi.org/10.2202/1538-0637.1429>
- Houdek, P. 2016. A perspective on consumers 3.0: They are not better decision-makers than previous generations. *Frontiers in Psychology*, 7(848). <https://doi.org/10.3389/fpsyg.2016.00848>.
- Houdek, P., & Koblovský, P. 2015. Where is my money? New findings in fiscal psychology. *Society*, 52(2), 155–158. <https://doi.org/10.1007/s12115-015-9873-7>.
- Ippisch, T. 2010. Telematics data in motor insurance: Creating value by understanding the impact of accidents on vehicle use. *Doctoral dissertation*, University of St. Gallen. Available: <https://pdfs.semanticscholar.org/b473/33b8850808875a45970fe4ff133ee0e18681.pdf>
- Iyengar, S. S., & Lepper, M. R. 2000. When choice is demotivating: Can one desire too much of a good thing? *Journal of Personality and Social Psychology*, 79(6), 995–1006. <https://doi.org/10.1037/0022-3514.79.6.995>.
- Kirzner, I. M. 1997. *How markets work: Disequilibrium, entrepreneurship and discovery*. London: Coronet Books Inc. ISBN: 978-0255364041
- Lacetera, N., Pope, D. G., & Sydnor, J. R. 2012. Heuristic thinking and limited attention in the Car market. *American Economic Review*, 102(5), 2206–2236. <https://doi.org/10.1257/aer.102.5.2206>.
- Levin, D. T., Drivdahl, S. B., Momen, N., & Beck, M. R. 2002. False predictions about the detectability of visual changes: The role of beliefs about attention, memory, and the continuity of attended objects in causing change blindness blindness. *Consciousness and Cognition*, 11(4), 507–527. [https://doi.org/10.1016/S1053-8100\(02\)00020-X](https://doi.org/10.1016/S1053-8100(02)00020-X).
- Lewis, G. 2011. Asymmetric information, adverse selection and online disclosure: The case of eBay motors. *The American Economic Review*, 101(4), 1535–1546. <https://doi.org/10.1257/aer.101.4.1535>.
- Liu, P. J., Wisdom, J., Roberto, C. A., Liu, L. J., & Ubel, P. A. 2014. Using behavioral economics to design more effective food policies to address obesity. *Applied Economic Perspectives and Policy*, 36(1), 6–24. <https://doi.org/10.1093/aapp/ppt027>.
- Masum, H., Tovey, M., & Newmark, C. 2012. *The reputation society: How online opinions are reshaping the offline world*. Cambridge: MIT Press ISBN: 9780262016643.
- Milkman, K. L., Beshears, J., Choi, J. J., Laibson, D., & Madrian, B. C. 2012. *Following through on good intentions: The power of planning prompts*. Working paper no. w17995. NBER working paper. doi: <https://doi.org/10.3386/w17995>
- Nosko, C., & Tadelis, S. 2015. *The limits of reputation in platform markets: An empirical analysis and field experiment*. Working paper no. w20830. NBER working paper. doi: <https://doi.org/10.3386/w20830>
- Pocheptsova, A., Amir, O., Dhar, R., & Baumeister, R. F. 2009. Deciding without resources: Resource depletion and choice in context. *Journal of Marketing Research*, 46(3), 344–355. <https://doi.org/10.1509/jmkr.46.3.344>.
- Resnick, P., Zeckhauser, R., Swanson, J., & Lockwood, K. 2006. The value of reputation on eBay: A controlled experiment. *Experimental Economics*, 9(2), 79–101. <https://doi.org/10.1007/s10683-006-4309-2>.
- Saeedi, M. 2014. *Reputation and Adverse Selection, Theory and Evidence from eBay*. Working paper no. 2102948. SSRN working paper. doi: <https://doi.org/10.2139/ssrn.2102948>
- Scheibehenne, B., Greifeneder, R., & Todd, P. M. 2010. Can there ever be too many options? A meta-analytic review of choice overload. *Journal of Consumer Research*, 37(3), 409–425. <https://doi.org/10.1086/651235>.
- Schwartz, B. 2005. *The paradox of choice: Why more is less*. New York: Harper Perennial.
- Sexton, S. 2014. Automatic bill payment and salience effects: Evidence from electricity consumption. *The Review of Economics and Statistics*, 97(2), 229–241. [https://doi.org/10.1162/REST\\_a\\_00465](https://doi.org/10.1162/REST_a_00465).
- Shah, A. K., Mullainathan, S., & Shafir, E. 2012. Some consequences of having too little. *Science*, 338(6107), 682–685. <https://doi.org/10.1126/science.1222426>.
- Simmons-Mosley, T. X., & Malpezzi, S. 2006. Household mobility in New York City's regulated rental housing market. *Journal of Housing Economics*, 15(1), 38–62. <https://doi.org/10.1016/j.jhe.2005.09.004>.
- Simons, D. J., & Levin, D. T. 1998. Failure to detect changes to people in a real-world interaction. *Psychonomic Bulletin and Review*, 5(4), 644–649. <https://doi.org/10.3758/BF03208840>.
- Stango, V., & Zinman, J. 2009. What do consumers really pay on their checking and credit card accounts? Explicit, implicit, and avoidable costs. *The American Economic Review*, 99(2), 424–429. <https://doi.org/10.1257/aer.99.2.424>.
- Tabarrok, A., & Cowen, T. 2018. The End of Asymmetric Information. *Cato Unbound*. [online]. [cit. 2015-06-19]. Available: <http://www.cato-unbound.org/2015/04/06/alex-tabarrok-tyler-cowen/end-asymmetric-information>.
- Thaler, R. H., & Benartzi, S. 2004. Save more tomorrow<sup>TM</sup>: Using behavioral economics to increase employee saving. *Journal of Political Economy*, 112(1), 164–187. <https://doi.org/10.1086/380085>.
- Thaler, R. H., & Sunstein, C. R. 2003. Libertarian paternalism. *The American Economic Review*, 93(2), 175–179. <https://doi.org/10.1257/000282803321947001>.
- Thaler, R. H., & Sunstein, C. R. 2008. Nudge: Improving decisions about health, wealth, and happiness. *Constitutional Political Economy*, 19(4), 356–360. <https://doi.org/10.1007/s10602-008-9056-2>.
- Trout, J. 2005. Differentiate or die. *Forbes*. [online]. [cit. 2015-06-19]. Available: [http://www.forbes.com/2005/12/02/ibm-nordstrom-coca-cola-ex\\_jt\\_1205trout.html](http://www.forbes.com/2005/12/02/ibm-nordstrom-coca-cola-ex_jt_1205trout.html).
- Vohs, K. D., Baumeister, R. F., Schmeichel, B. J., Twenge, J. M., Nelson, N. M., & Tice, D. M. 2008. Making choices impairs subsequent self-control: A limited-resource account of decision making, self-regulation, and active initiative. *Journal of Personality and Social Psychology*, 1(S), 883–898. <https://doi.org/10.1037/0022-3514.94.5.883>.
- Winston, C. 2007. *Government failure versus market failure: Microeconomics policy research and government performance*. Washington, DC: Brookings Institution Press ISBN: 9780815793915.
- Wright, J. D. 2007. Behavioral law and economics, paternalism, and consumer contracts: An empirical perspective. *NYU Journal of Law & Liberty*, 2(3), 470–511. Available at SSRN: <https://ssrn.com/abstract=1015899>
- Zervas, G., Proserpio, D., & Byers, J. W. 2015. The impact of the sharing economy on the hotel industry: Evidence from Airbnb's entry into the Texas market. In proceedings of the *Sixteenth ACM Conference on Economics and Computation*, ACM. 637–637. ISBN: 978-1-4503-3410-5
- Zlatev, J. J., Daniels, D. P., Kim, H., & Neale, M. A. 2017. Default neglect in attempts at social influence. *Proceedings of the National Academy of Sciences*, 114(52), 13643–13648. <https://doi.org/10.1073/pnas.1712757114>.

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