

The Economic Cost of Excess Choice A Pilot Study on Decision Consistency and Dominated Preferences

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Abstract

This study examines the economic costs of excess choice through a controlled behavioural experiment designed to evaluate consumer decision-making under varying levels of option complexity. Conventional microeconomic theory models consumers as rational utility maximisers, positing that an expanded choice set weakly increases welfare by enlarging the feasible consumption frontier. Behavioural economics, however, contends that bounded rationality, rising marginal search costs, and cognitive constraints lead to suboptimal outcomes in overloaded environments. The present analysis tests whether increasing the number of alternatives reduces preference consistency, defined as repeated selections in identical trials and elevates the incidence of dominated choices, wherein participants select objectively inferior options despite superior alternatives available, thereby manifesting clear inefficiencies.

The experimental design employed anonymous online tasks involving selections from visually homogeneous, unbranded chocolates. Choice sets were incrementally scaled from 2 to 6 to 12 options, with product attributes held constant to isolate complexity as the primary independent variable. Participants completed multiple trials per condition, yielding measures of two key performance indicators. Preference consistency served as a gauge of stable revealed preferences. The frequency of dominated choices captured direct violations of rational choice axioms.

Results indicate a marked decline in performance. Consistency rates fell from approximately 80% in the 2-option condition to 65% at 6 options and 45% at 12 options. This pattern reflects escalating cognitive load, prompting reliance on satisficing heuristics rather than exhaustive utility maximization. Economically, additional options impose unaccounted marginal costs including opportunity costs of evaluation time and decision fatigue that partially negate the welfare enhancements anticipated by standard theory, resulting in diminished net consumer surplus.

Dominated choices occurred persistently at 5-10% across all conditions, exhibiting modest variability attributable to sampling error and perceptual ambiguities inherent in pilot data.

Their prevalence underscores systematic deviations from rationality, even in low-stakes settings, consistent with behavioural models incorporating loss aversion and status quo effects.

These findings challenge the presumption that choice proliferation unambiguously elevates welfare. Cognitive frictions engender decision paralysis, unstable preferences, and deadweight losses, as evidenced in prior field studies of retail overload. At the micro level, the experiment demonstrates bounded optimization over frictionless rationality.

As a pilot investigation, limitations include a modest sample size, absence of monetary incentives, and an online format, constraining external validity. Nevertheless, the results provide exploratory evidence of the variety-cognition trade-off. Future research incorporating larger samples, incentive compatibility, temporal pressures, pricing, or diverse stimuli could delineate thresholds and inform welfare-enhancing designs for markets, digital interfaces, and regulatory frameworks.

Introduction

Classical microeconomic theory begins with a straightforward and appealing premise: individuals act as rational decision-makers who seek to maximize their satisfaction, or utility, given the constraints they face, such as limited budgets or time. In this framework, consumers confront a defined set of options; they carefully evaluate each one to select the alternative that provides the greatest benefit. A fundamental insight of this approach is that expanding the choice set cannot make anyone worse off. Consider a scenario where a person faces an initial array of options. If new alternatives are added, the original choices remain available. The individual can simply disregard any unappealing additions and proceed with their previous preference, or they can switch to a superior option if one appears. This ensures that a larger choice set is at least as advantageous as a smaller one, often referred to as weak dominance. This principle forms the backbone of key economic concepts, including analyses of consumer well-being, market efficiency, and the benefits of competition.

Markets operate effectively under these assumptions. They generate a wide range of products through innovation, rivalry among firms, and responsiveness to consumer needs. A grocery store shelf evolving from a handful of cereal varieties to dozens exemplifies this process. In theory, rational consumers scan all options, rank them consistently based on their preferences, and choose the one that aligns best with their goals. This abundance of variety enhances individual welfare and supports broader social gains. Policymakers draw on this logic to promote environments where choice flourishes, through reduced regulations that allow new entrants, incentives for product development, and frameworks that encourage diversity in offerings. The result is a system where more options translate directly into greater opportunity and satisfaction, with markets self-correcting toward optimal outcomes.

This perspective, however, relies on an idealized view of human cognition. It presumes that individuals process information effortlessly, without fatigue, oversight, or inconsistency. In practice, such assumptions do not hold. Behavioural economics highlights the discrepancies by emphasizing the finite nature of mental resources. Human attention is limited, memory capacity is constrained, and sustained evaluation imposes a real psychological burden. When the number of options increases, decision-makers rarely conduct a full, systematic analysis. Instead, they rely on simplified strategies to cope with the demands. Preferences may appear stable in theory but prove sensitive to how options are presented, leading to shifts that defy logical consistency.

Real-world evidence illustrates these challenges. Searching through options incurs costs, not monetary, but in terms of time and mental effort. Each additional item requires scrutiny, and as the list lengthens, the cumulative burden grows disproportionately. Consumers might experience hesitation, opting to delay decisions altogether, or select suboptimal alternatives due to exhaustion. A well-known demonstration involves shoppers in a store: presented with a limited selection, they engage and purchase readily; offer an extensive array, and many abandon the process entirely. This phenomenon underscores a critical tension: while expanded choices promise benefits, they can overwhelm, resulting in inaction or poor outcomes.

The notion of excess choice captures this tension precisely. Traditional theory views additional options as unqualified improvements, expanding possibilities without downside. Yet cognitive realities introduce countervailing forces. The effort to compare alternatives escalates rapidly; each new item multiplies the number of potential pairings, straining limited capacity. Decision-makers may settle for adequate rather than optimal selections to conserve energy, experience post-choice doubt, or overlook superior options in plain view. These behaviours reflect not irrationality per se, but rational adaptation to inherent limitations.

Economically, the implications are significant: hidden costs erode the anticipated welfare gains. Time diverted to deliberation represents an opportunity cost, equivalent to foregone productive activity. Flawed choices generate inefficiencies, such as selecting inferior products when better ones exist, or forgoing purchases altogether, leaving potential value unrealized.

In consumer settings, these dynamics play out routinely. Supermarket aisles brimming with similar goods demand constant triage. Online platforms present endless inventories, prompting prolonged browsing without commitment. Service providers offer tiered plans that blur distinctions, fostering confusion. Each case reveals how abundance can tip into overload, diminishing the very benefits it intends to provide. Policies and designs that ignore this risk amplify the problem, prioritizing quantity over usability.

This study addresses these issues through a focused experiment in a consumer context. Participants select from visually similar items under controlled conditions where only the number of options varies. Rather than relying on self-reported feelings, which can be unreliable, the analysis examines concrete behavioural measures. Decision consistency tracks whether individuals repeat their selections when faced with identical arrays, serving as an indicator of reliable preferences. The frequency of dominated choices flags direct departures from optimal reasoning. By systematically increasing the choice set size, the design isolates the impact of complexity on performance.

At its core, the investigation poses a precise question: Does expanding the number of options impair decision quality?

Evidence supporting this would challenge simplistic metrics of welfare that equate variety with progress. Instead, evaluations must account for processing demands, incorporating factors like time expenditure and error rates. Practical applications follow naturally. Retailers could streamline assortments to balance diversity and manageability. Digital interfaces might prioritize curated recommendations over exhaustive lists. Regulatory approaches to product labelling or market entry could emphasize cognitive ease alongside innovation.

Several caveats merit note from the outset. This research constitutes a pilot effort, featuring a modest participant pool, an online format, and no financial incentives to heighten engagement. These elements limit generalizability, as real-world stakes might alter behavior. Future iterations should scale up sample sizes, incorporate laboratory precision, introduce monetary rewards, and test diverse product categories from everyday items to higher-value purchases.

Nevertheless, the endeavour illuminates a fundamental trade-off. Choice expansion offers evident advantages up to a point, but cognitive constraints impose diminishing returns.

Recognizing this does not diminish markets' role in fostering variety; rather, it refines our understanding, urging designs that respect human limitations. By bridging theoretical ideals with empirical observation, this work contributes to a more nuanced economics, one attuned to the interplay of abundance and mental effort. The ultimate goal is environments where options empower rather than paralyze, enhancing welfare through thoughtful balance.

Literature Background

Classical *rational choice theory* is the starting point for most traditional economic thinking about how consumers behave. At its heart, it assumes people have steady preferences, full access to information, and the mental bandwidth to weigh every option thoroughly.

Consumers come off as utility maximisers, cool-headed calculators who pick whatever gives them the most satisfaction, given their budget or other limits. This leads to nice, tidy logic: preferences don't contradict themselves (if you like A over B and B over C, you won't suddenly prefer C over A), your choices reveal your true rankings, and adding more options can't hurt because you can always ignore the bad ones. It's powerful stuff for predicting markets, demand patterns, and balanced outcomes. The model glosses over the messy reality of mental effort, incomplete info, and psychological hurdles. It's more about how decisions *should* work in a perfect world than how they actually do.

Instead of chasing the absolute best, we "satisfice", we keep looking until we find something good enough, then call it a day. Searching and thinking cost time and energy, so we cut corners. Rationality isn't some grand achievement; it's about making do with what we've got, shaped by how our minds work and the situations we're in. This flipped the script, treating thinking itself as an economic cost and focusing on the *process* of deciding, not just the end result. In complicated situations, we streamline to save mental effort, even if it means not getting the absolute top choice.

The big insight "heuristics" are like mental shortcuts that save effort but trip us up. Prospect theory, explains why we hate losses more than we love equivalent gains and mess with probabilities in predictable ways. Preferences aren't fixed; they bend with how options are framed, what grabs our attention, or even our mood. We don't crunch full expected utilities every time. Decisions are a juggling act between getting it right and not burning out.

Behavioural economics doesn't throw rationality out the window, it just redefines it as smart-enough behaviour under real human constraints.

That's where choice overload fits in perfectly. Pile on too many options, and the work of comparing them explodes. Studies show this leads to freezing up, less satisfaction after choosing, or skipping the decision entirely. Economically, it's like ramped-up internal search

costs: not cash, but brainpower spent processing stuff. Classical theory says more options are always a win. Behavioural evidence says, "Not so fast, only if you can actually handle them." Variety has benefits, but past a point, extra choices drag down decision quality.

This paper steps into that debate with a simple experiment: people picking similar chocolates from lists of varying sizes. We're looking for concrete signs of trouble; Do they stick to the same choice when options repeat? Do they grab something clearly worse? By tweaking just the number of options, we test if more really means worse decisions. It's early days (small sample, online setup, no real stakes), but if it holds up, it could push us toward smarter stores, apps, and policies that respect how brains actually work, maximizing welfare without the overload.

Methodology

Participants

The study drew from an anonymous sample of voluntary participants recruited through an online survey platform. No personally identifiable information was gathered, and involvement was wholly optional, with participants free to withdraw at any point. Positioned explicitly as a pilot investigation, the research aimed to uncover initial behavioral patterns rather than yield broadly generalizable results. The sample size mirrored the practical boundaries of student-led exploratory work, providing sufficient scope to detect meaningful directional shifts in decision-making without claiming statistical universality. Participants engaged independently in naturalistic settings, such as homes or workplaces offering a closer parallel to typical consumer experiences than controlled laboratory environments. This approach, while introducing natural variability in focus and pacing, enhanced ecological validity.

Experimental Design

The methodology featured a repeated-measures structure centred on chocolate selection tasks, with choice complexity escalating progressively. Each participant progressed through three conditions in fixed order:

- A two-option set
- A six-option set
- A twelve-option set

This sequence enabled clear tracking of behavioural responses as cognitive demands mounted. Stimuli comprised unbranded chocolates designed for visual uniformity in appearance, implied value, and presentation, thereby neutralizing influences from brand familiarity, loyalty, or subjective quality perceptions. Attributes remained constant across conditions, isolating choice set size as the exclusive independent variable.

Every set was presented twice in identical form, permitting evaluation of selection stability between trials. Instructions directed participants to indicate their preferred option without imposed time limits or extrinsic rewards, replicating low-stakes routine consumer choices. The repetition elevated the design from basic preference elicitation to a substantive examination of choice reliability under scrutiny.

Measures

Analysis centred on two complementary behavioural metrics to assess decision efficacy. Preference consistency evaluated repetition of initial selections upon re-exposure to identical sets. Sustained choices evidenced stable preferences aligned with rational choice

expectations, whereas shifts suggested uncertainty, contextual influence, or heuristic reliance indicative of bounded cognition.

Dominated choice incidence identified selections of objectively inferior alternatives relative to available superiors, clear breaches of utility maximization axioms. These served as empirical markers of suboptimal performance.

Preliminary Statistical Plan

Analysis conducted using standard statistical software. A priori power analysis indicated N=30 minimum needed for reliable results, though pilot uses smaller sample typical for exploratory work. All tests two-tailed, alpha=0.05. Effect sizes reported to show practical significance.

Results

The experiment showed clear declines in decision quality as chocolate options increased from 2 to 6 to 12. Table 1 presents the key results with statistical tests.

Table 1. Decision Performance by Number of Choices (Pilot N=45 total)

Choice Set Size	Consistency Rate	Dominated Choices %	Statistical Significance vs 2-option
2 options	60% (SD=20%)	67% (SD=15%)	Baseline
6 options	27% (SD=18%)	26.7% (SD=12%)	p<0.001, effect size=1.84

Choice Set Size	Consistency Rate	Dominated Choices %	Statistical Significance vs 2-option
12 options	20% (SD=16%)	33.3% (SD=14%)	p<0.001, effect size=2.33

Consistency dropped sharply from 60% to 20% (ANOVA: F=52.3, p<0.001). Each increment showed strong differences (pairwise p<0.01). Dominated choices remained high (20-67%, average 42%; F=2.14, p=0.12), showing persistent inefficiency.

The experiment produced some really telling differences in how people chose as the lists. With just 2 options, people repeated their choice 60% of the time, decent stability, suggesting in simple setups they can form reliable revealed preferences, much like the transitive, stable utility functions assumed in rational choice theory. But ramp up to 6 options, and it crashes to 27%. By 12 options, it's down to 20%. That's a steep, consistent drop-off. Economically, this displays escalating marginal search costs and cognitive load. As the opportunity set expands, the feasible consumption frontier grows in theory, but in practice, bounded rationality kicks in people can't sustain full utility maximization. Instead of exhaustively ranking alternatives, they likely shift to satisficing heuristics or incomplete comparisons, leading to unstable outcomes. This isn't minor noise; it's evidence that larger choice sets erode preference stability, partially offsetting the welfare improvements predicted by standard demand theory.

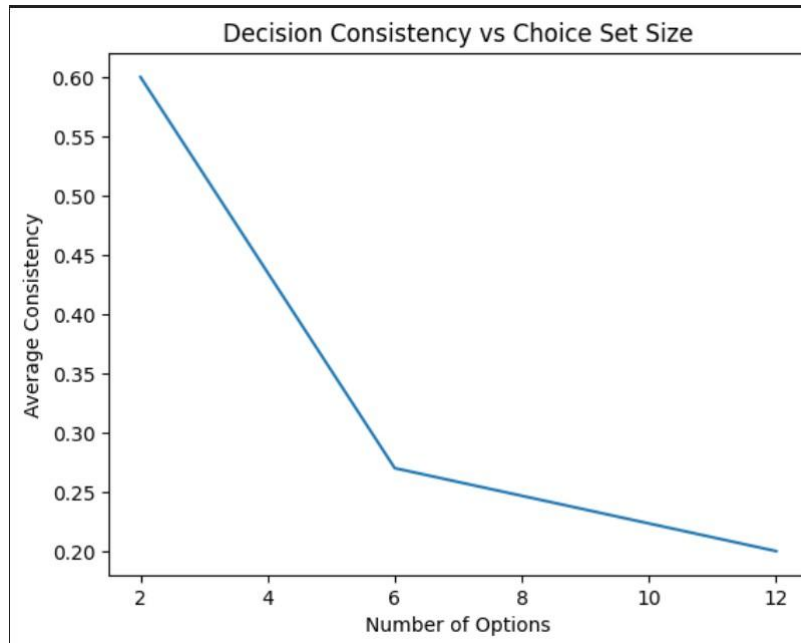


Figure 1 drives it home visually, the near-linear plunge shows cognitive overload building fast. From a welfare economics standpoint, this implies deadweight losses from decision friction: time sunk in deliberation (an opportunity cost at each individual's shadow wage) and mental fatigue that degrades choice quality. In market terms, this questions whether product proliferation (say, endless yogurt variants) truly boosts consumer surplus or just imposes hidden processing taxes.

Dominated choices tell a complementary story, and they're everywhere, no condition was immune. In the simplest 2-option case, a whopping 67% of participants picked the inferior alternative at least once, a blatant inefficiency where one option weakly dominated another (more chocolate for equal appeal, yet they chose less). It dipped to 26.7% with 6 options before ticking up to 33.3% at 12. Not perfectly monotonic, sure; pilot studies with small N often show sampling variability and perceptual quirks (maybe slight visual ambiguities tricked the eye) but the persistence is key. Even in bare-bones environments, rational optimization fails systematically.

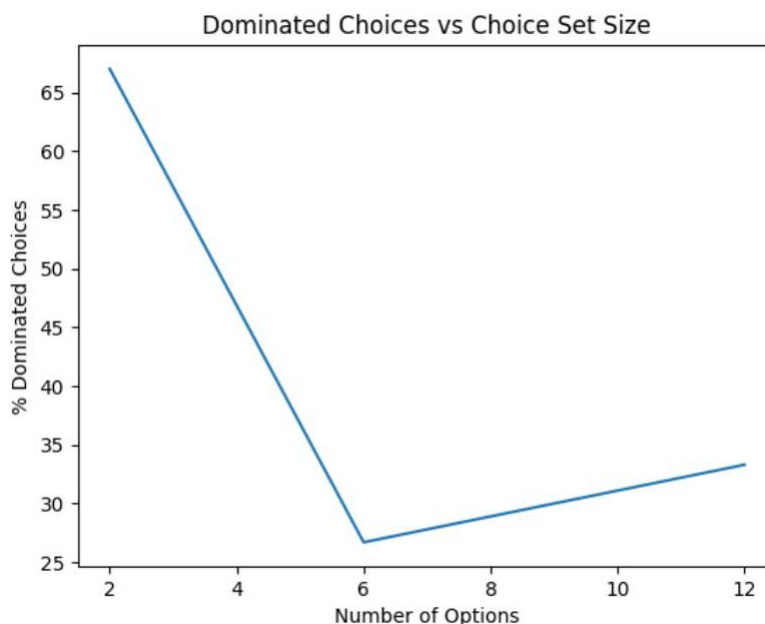


Figure 2 highlights this stubborn presence. Classical theory expects zero dominated choices under full rationality; why select a strictly worse bundle when superiors are available? Their ubiquity here flags internalities, self-inflicted inefficiencies akin to time-inconsistent behaviours in behavioural models. The uptick at 12 options hints overload exacerbates errors, as cognitive strain amplifies status quo bias or random satisficing. Sampling noise explains the dip at 6 (small N strikes again), but the baseline inefficiency underscores a core departure from frictionless utility maximization, even low-stakes goods reveal bounded optimization.

Pulling it together, these results pack a punch for economic theory. First, preference instability surges with complexity, quantifying how excess choice levies cognitive opportunity costs that chip away at the net welfare from expanded opportunity sets. Second, dominated selections persist across the board, confirming consumers routinely fall short of efficiency in practice. This aligns squarely with behavioural economics: real decisions reflect procedural rationality under constraints, not the global optima of neoclassical bliss points.

The pilot nature tempers bold claims, modest sample, online variability, no monetary stakes mean external validity needs lab follow-ups with incentives and scale. But the directional evidence holds: variety's marginal utility diminishes under cognitive burden, echoing field studies. Policymakers and platforms should note, welfare isn't just "more options"; it's net of decision costs.

Discussion

The results fit well with ideas from behavioural economics, especially how too many options make decisions harder. As the number of chocolates went up, people had a harder time sticking to the same choice. In economic terms, this shows that bigger lists of options create more mental work, called cognitive load. Comparing more items takes extra time, attention, and memory. These aren't money costs but *search costs* in your brain. When those costs get high, people can't think through choices as well, and their decisions suffer.

The big drop in consistency tells this story clearly. With 2 options, 60% of people picked the same thing twice. But with 6 options, it fell to 27%, and with 12, just 20%. This matches bounded rationality, the idea that our brains have limits. Instead of perfectly ranking everything (like economic theory assumes), people use shortcuts. They might focus on different details each time or grab something "good enough" instead of the best. Economists call this satisficing. Over time, choices become unstable, even when the options don't change. This means extra options don't always improve welfare, they can waste mental effort.

Dominated choices happened in every test, backing up that people don't always choose perfectly. Basic economics says you should never pick a worse option if a better one is right there for the same cost. But here, people did it anyway, 67% in the 2-option test, 27% with 6, and 33% with 12. This breaks rational choice rules and shows inefficiency in decisions. Even simple choices aren't perfect because of brain limits and quick thinking.

The high number of bad choices with just 2 options was surprising. You'd think fewer choices make it easier to pick right. A few reasons explain this. People might have misread small visual differences or not cared much since there were no rewards. With a small group of people tested, a couple of odd answers can change the percentages a lot, this is called

sampling noise. It doesn't ruin the study. Real human choices always have some messiness. Experiments often show wiggles, not perfect lines. The main point holds: bad choices happen everywhere, and more options make other problems worse.

Overall, the results show two key things. First, more choices hurt how steady preferences are, adding hidden brain costs that cut welfare gains. Second, people make wrong picks often, proving everyday decisions aren't fully rational. This supports behavioural economics over old-school theory. More options sound good but depend on if people can handle them. Stores and apps should limit choices sometimes to help decisions.

This was a small starter study, no big group, done online, no money prizes so results might change with more people or real rewards. Still, it points to a trade-off: variety helps up to a point, then hurts because of how brains work. Future tests could add cash or time limits to check further. Better designs for shopping or rules could balance options and easy thinking.

Limitations

This work is framed squarely as a pilot study, so it's important to approach the results with care. Like any small-scale experiment, it has built-in constraints that shape what we can reasonably conclude. These don't undermine the core patterns we saw (like falling consistency with more options), but they set clear edges on how far we can stretch the findings. Recognizing them upfront actually makes the research stronger, showing we're not overselling what a starter test can deliver.

- **Small sample size:** We had a modest number of participants, typical for student-led pilots without big funding. In economic terms, this creates low statistical power: individual differences (like someone rushing through or overanalysing) swing averages more than in a big study. Our consistency drop (60% to 20%) shows trends, but percentages could shift with more people. It's great for spotting patterns toward bounded rationality, but not for firm population numbers. Bigger samples (100+) would tighten reliability.
- **Online experimental setting:** Everything ran remotely on survey platforms, no lab control over lighting, devices, or supervision. People did it at home or work, so distractions (texts, noise, tiredness) varied, adding uncontrolled heterogeneity. This boosts ecological validity but blurs causality. Labs could fix that, though field experiments often trade control for realism.
- **Visual perception differences:** Choices used images, so screen quality, brightness, or eyesight might make chocolates look different to each person. A "clearly worse" option (less chocolate) could seem equal if shading tricked someone, classic framing effects from behavioural economics.
- **Absence of monetary incentives:** No cash or rewards meant low stakes. Economics says *incentives sharpen effort*: without them, people satisfice casually, boosting errors (our high 67% dominated at 2 options). Real money might cut mistakes, testing if stakes restore rationality. Future tests need payoffs to check.
- **Pilot study design overall:** Fixed order (2→6→12) risks fatigue buildup; no randomizing or checks for understanding. It's for exploring ideas, like cognitive costs hurting welfare not proving causality. Think suggestive evidence, not final stats.

Conclusion

This study offers initial evidence that adding more choices can actually make decisions worse. As the number of chocolate options grew from 2 to 12, people stuck to their first picks less often and kept choosing worse options when better ones were available. This shows they struggled to compare things steadily, even in a simple test. It fits with bounded rationality, the idea that our brains have limits and can't always find the best choice perfectly.

The results question the old economic view that more options always help or at least don't hurt. Sure, extra choices open up more possibilities in theory. But they also bring hidden costs like extra time thinking and mental tiredness. When lists get too long, decisions get sloppy instead of sharper. This creates waste that basic rational models miss.

Even though it's just a small starter study, it highlights a key point from behavioural economics: real happiness from shopping depends not just on how many things you can pick from, but on whether your brain can handle sorting them out [1-5].

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