

WORKING PAPERS ON CAPITAL AS POWER

No. 2025/01

Earning through Obsolescence

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in the United States 1970–2018**

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March 2025

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Introduction

That we live amid a global ecological catastrophe has been sufficiently argued elsewhere. Among the most immediately visible signs of ecological unsustainability is the rising tide of waste generated by the discarding of household consumer durable goods.¹ Corresponding to the growth of waste has been the demonstrable decline in average usage lifespans for many household consumer durable goods.² Average product usage lifespans, here defined as the 'interval of time between consumer purchase and discarding of a household durable good', have been in documented decline across numerous studies undertaken in recent years.³ The falling usage lifespan, and increasing rate of disposal, of household durable goods is a primary driver behind waste increases.⁴

Chief among the causes identified for falling consumer durable product usage lifespans has been the purported growth of consumer materialism and the emergence of 'overconsumption'; a theoretical construct which assigns a litany of sociological and ecological ills to the purported capricious, hedonistic drive of human beings to avariciously consume and dispose of goods in an unsustainable way.⁵ In this vein, the 'materialistic impulse' of consumers, exacerbated by advertising, to purchase new models of consumer durable goods in place of still-functioning older models has been argued to be a primary factor driving down average product usage lifespans.⁶

¹ For the purposes of this analysis "Household Consumer Durables" encompass major and minor electronic appliances, and household furnishings. NAICS sectors numbered 3352 & 3371 respectively.

² Huisman, J. V., et al. "The Dutch WEEE Flows." United Nations University, ISP-SCYCLE (2012) documents this trend in the Netherlands.

³ Bakker, Conny, et al. "Products That Go Round: Exploring Product Life Extension through Design." *Journal of Cleaner Production*, vol. 69, Apr. 2014, pp. 10–16. Documents several such studies.

⁴ Forti, V., et al. *The Global E-waste Monitor 2020. Quantities, flows, and the circular economy potential*. United Nations University, ISP-SCYCLE (2020) p. 13.

⁵ The MIT Press textbook *The Interdisciplinary Science of Consumption* by Preston et al (2014) locates the human drive to overconsume within an evolutionary psychological perspective of humans' 'perpetual feelings of scarcity'.

⁶ Annie Leonard's 2011 *The Story of Stuff* encapsulates the popular worldview that avaricious consumer choice is at the root of many ecological maladies.

Countervailing the 'overconsumption' narrative is the charge of 'planned obsolescence'. Detractors of the 'overconsumption' narrative argue that it is not consumers who are at fault for the rising tide of waste, but rather it is manufacturers who deliberately decrease the durability of their products so that they break more readily and are much more difficult to repair. Advocates of the 'planned obsolescence' theory argue that manufacturers do this to stimulate higher levels of replacement buying in consumers and thus generate greater profits.⁷

However, despite the concept having a history stretching back to at least the early 1930s⁸, scholarly examinations of 'planned obsolescence' have largely centred on anecdotal consumer experiences and case studies of single manufacturers⁹, making it difficult to expand the analysis to include whole sectors of consumer durables. Other examinations which employ the term have reified the narrative of 'overconsumption' by arguing that rather than a practice of reducing product quality, 'planned obsolescence' can be best understood as marketing practice whereby new models of goods are introduced in order to induce consumers to perceive existing models as 'obsolete'.¹⁰

Further, unlike the theory of 'overconsumption', which fits into mainstream economic models of sovereign consumer demand, the theory of 'planned obsolescence' is difficult to square with an economic model wherein supply and demand are mutually independent, and prices are modulated by free market competition. Rather, the pressures of competition and sovereign consumer selection ought to prevent any widespread adoption of 'planned obsolescence' as consumers would rationally gravitate towards firms which offered superior, more durable products, incentivizing superior quality manufacturing and driving the purveyors of 'planned obsolescence' out of business.¹¹

The purpose of this article is to empirically examine the concepts of 'overconsumption' and 'planned obsolescence', utilizing data drawn from the United States between 1970 and 2018, which encompasses the full span of time in which the US Environmental Protection Agency collected and published public statistics on household durables waste. This

⁷ This theory has been documented in academic literature going back to the 1950s and is best summed up by Guiltinan, Joseph. "Creative Destruction and Destructive Creations: Environmental Ethics and Planned Obsolescence." *Journal of Business Ethics*, vol. 89, no. S1, May 2009, pp. 19–28.

⁸ Whiteley, Nigel. "Toward a Throw-Away Culture. Consumerism, 'Style Obsolescence' and Cultural Theory in the 1950s and 1960s." *Oxford Art Journal*, vol. 10, no. 2, 1987, pp. 3–27.

⁹ Guiltinan (2009), for example.

¹⁰ Nigel (1987), pp. 3-27.

¹¹ Almost as soon as the concept of 'planned obsolescence' appeared it began to attract Neoclassical Economists who sought to 'debunk' it. Detractions, such as Reisman (1973), centre on an understanding of markets as perfectly competitive. Reisman, George. "THE MYTH OF PLANNED OBSOLESCENCE." *Il Politico*, vol. 38, no. 3, 1973, pp. 481–492.

analysis will be undertaken to arrive at a more coherent understanding of why product usage lifespans have been falling across two major consumer durables manufacturing sectors in the US: electronic appliances and household furnishings. As will be demonstrated, the concept of 'overconsumption' is not only misleading, but it also obscures the core practices which underpin the fall in consumer durables usage lifespans. That overall consumption levels or consumer demand patterns have shifted enough to account for this decline in product usage lifespans is difficult to demonstrate. Rather, the phenomena of falling consumer durable lifespans appear to originate not from the 'materialistic impulse' of the demand side driving disposal of consumer durables prior to the expiration of their usage value, but from the pecuniary aims of the supply side and the phenomenon of falling durability of consumer goods known as 'planned obsolescence'. This 'planned obsolescence' cannot be adequately theorized within the scope of Neoclassical Economics and as such requires a heterodox theoretical understanding which builds on the institutional economics of Thorstein Veblen. A discussion of this heterodox theoretical understanding of 'strategic sabotage' will follow an empirical investigation of the competing theories of 'overconsumption' and 'planned obsolescence'.

The myth of 'overconsumption'

The 'overconsumption' narrative has deep roots in (neoclassical) liberal economic theory. In the liberal view, the natural equilibration of supply by demand prevents any such scenario which could be termed 'general inferior production'. Downward pressure on price would quickly reprimand any individual producer of a product inferior to that of their competitors. At an aggregate level, the equilibrating mechanisms of market competition would serve to prohibit a general level of production which did not fundamentally reflect a maximization of technological capacity and efficiency since consumers will rationally demand the highest quality product at the best possible price.¹² If there is any kind of 'glut' of consumption it must merely be reflective of the legitimate revealed preferences of avaricious consumers. Thus while 'overconsumption' may be an ecological problem, it is not an economic problem.

Were this theory of 'overconsumption' to hold true, it would be expected that its chief measurable by-product, rising levels of durable household waste, would be reflective of rising levels of consumer spending on durables. After all, consumer spending is the core metric by which consumption is measured. If we are truly in a period of materialistic

¹² These arguments reproduce themselves across liberal economic thought. Here is one such specific example: Kranton, Rachel. (2003). "Competition and the Incentive to Produce High Quality." *Economica*, 70. 385-404.

'overconsumption' there must be an increase in real consumer spending in some way commensurate with the surging proliferation of waste products.

A view of the growth trajectories of per capita 'real' (adjusted using the annual US CPI) consumer spending on household durables relative to per capita household durables waste in the United States provided in *Fig 1.1* undermines the notion that the two are meaningfully correlated.

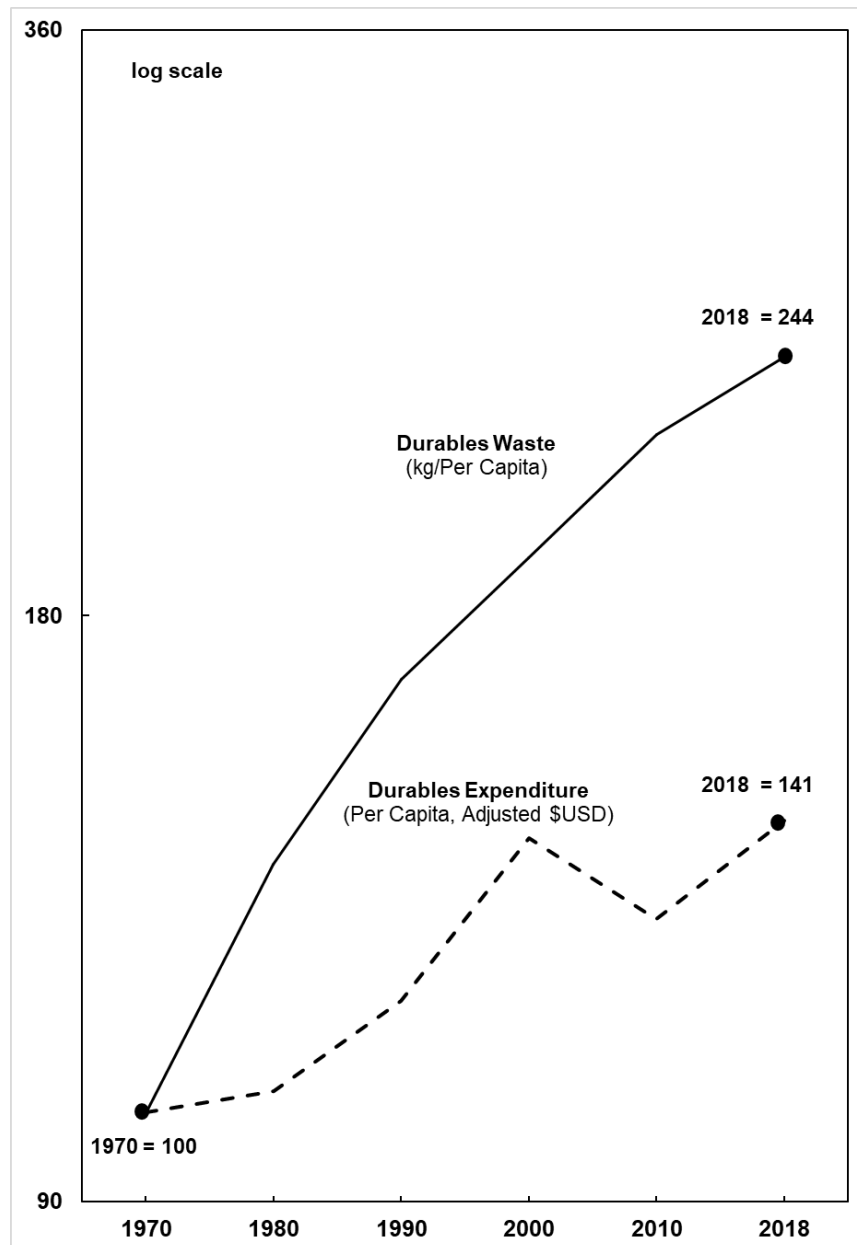


Fig 1.1: Per Capita Household Durable Goods Solid Waste and 'Real' Household Expenditure in Household Durables category.

Source: (US) Environmental Protection Agency: 1970-2018 Data on all Durables Goods in Municipal Solid Waste (MSW) Stream. OECD: US Household Expenditure by Purpose (COICOP) – Household Durables. Population Data from Global Financial Data (POPUSA). CPI Data from FRED (CUSR0000SAD)

In 'real' terms, per capita spending within the consumer durables category grew by 41% between 1970 and 2018. During this exact same period, per capita solid waste generation within the same category grew by 144%. Clearly the increase in the waste products of consumption cannot be attributed solely to an increase in overall consumption.

It is possible that, all things remaining equal, the differential growth of waste relative to consumption could be the result of shifting consumer preference for cheaper, more readily disposable goods in place of costlier, longer lasting goods. In this scenario the liberal narrative of 'overconsumption' would remain intact even without a marked increase in overall consumer spending. While it is difficult to empirically measure subjective notions such as 'consumer preference', the explosive growth of 'recycling' and 'sustainability marketing' during the period under examination, and the corresponding branding of finished goods with labels such as 'recyclable' and 'eco-friendly' provide evidence that in developed markets such as the United States consumer sentiment favours finished goods which are sustainable rather than disposable.¹³ Even if this trend of consumer preference for sustainability was not the case, it would be difficult to proffer the argument that consumer demand has shifted definitively towards goods with lower durability, particularly when considering that the average 'real' cost of consumer durables in the United States *increased* by 57% between 1970 and 2018.¹⁴

One thing which can be ascertained from *Fig. 1.1* is that if household durables waste is increasing at a level far outstripping the growth of household durables consumption, it must be due to a substitution among finished goods for ones which generate more waste than they did previously, or otherwise a shift in the balance of household consumption towards goods with diminished durability. If this substitution or shift cannot be attributed to consumer demand, then the analysis must move to the supply-side to locate a cause, and the theory of 'overconsumption' must be challenged.

Supply Side Considerations

Before proceeding to an analysis of a supply-side theory which might better explain the trend of falling product usage lifespans, it is necessary to determine the validity of the argument which countervails 'overconsumption'; that of

¹³ Bowles, Stefanie. *Whose Logo: Sustainable Consumption and Production in North America*. Policy Research Initiative, 2011. Bowles provides a thorough analyses of so-called "green consumerism".

¹⁴ U.S. Bureau of Labor Statistics, Consumer Price Index for All Urban Consumers: Durables in U.S. City Average. Percent increase 01-01-1970 to 01-01-2018.

'planned obsolescence'. At its core, 'planned obsolescence' rests on two related claims: (1) that manufacturers are deliberately producing products in such a way that their durability is reduced relative to what could be achieved if materials science and technological capacity were leveraged to their full extent, (2) this deliberate sabotaging of durability is undertaken in order to generate greater profits through greater replacement buying by consumers. Only through an empirical demonstration of these two claims can the theory of 'planned obsolescence' be meaningfully substantiated.

One way to approach this need to empirically demonstrate 'planned obsolescence' has been to track the average usage lifespan of select consumer durable goods over a period of time in order to document a decrease in their durability. While studies utilizing this approach¹⁵ have documented a demonstrable decline in the usage life of many products, they are limited by their reliance on waste flow data to estimate product lifespans, and as result arrive at uncertain conclusions about durability. Thus, while these studies empirically verify the notion that consumer durables goods average usage life is steadily decreasing, they cannot assign a causal relationship to either supply-side or demand-side pressures as it is impossible to determine from bulk waste-flow data whether or not goods were disposed of due to expiration of usage value or due to avaricious consumer demand for newer products.

Another approach to analyzing changes in the durability of consumer durable goods is to examine the relative rate of depreciation of household durable goods over time. Were it to hold true that manufacturers are deliberately sabotaging their products in order to reduce usage life and capacity to repair, it would stand to reason that this would be reflected in an accelerated rate of 'geometric' depreciation.¹⁶ After all, the very definition of the words 'planned obsolescence' imply a more rapid diminishing of use value, or greater rate of depreciation, than could otherwise be achieved.

Fig 1.2 provides an examination of the book value depreciation of household consumer durable goods held annually by US households between 1970 and 2018, providing evidence for the notion that the durability of household durables has been in steady decline.

¹⁵ For example, Bakker et al (2014) & Huisman et al (2012) cited earlier.

¹⁶ 'Geometric depreciation' here refers to the rate at which capital assets diminish in capital value, or are 'consumed', over time, not the rate at which assets are disposed of.

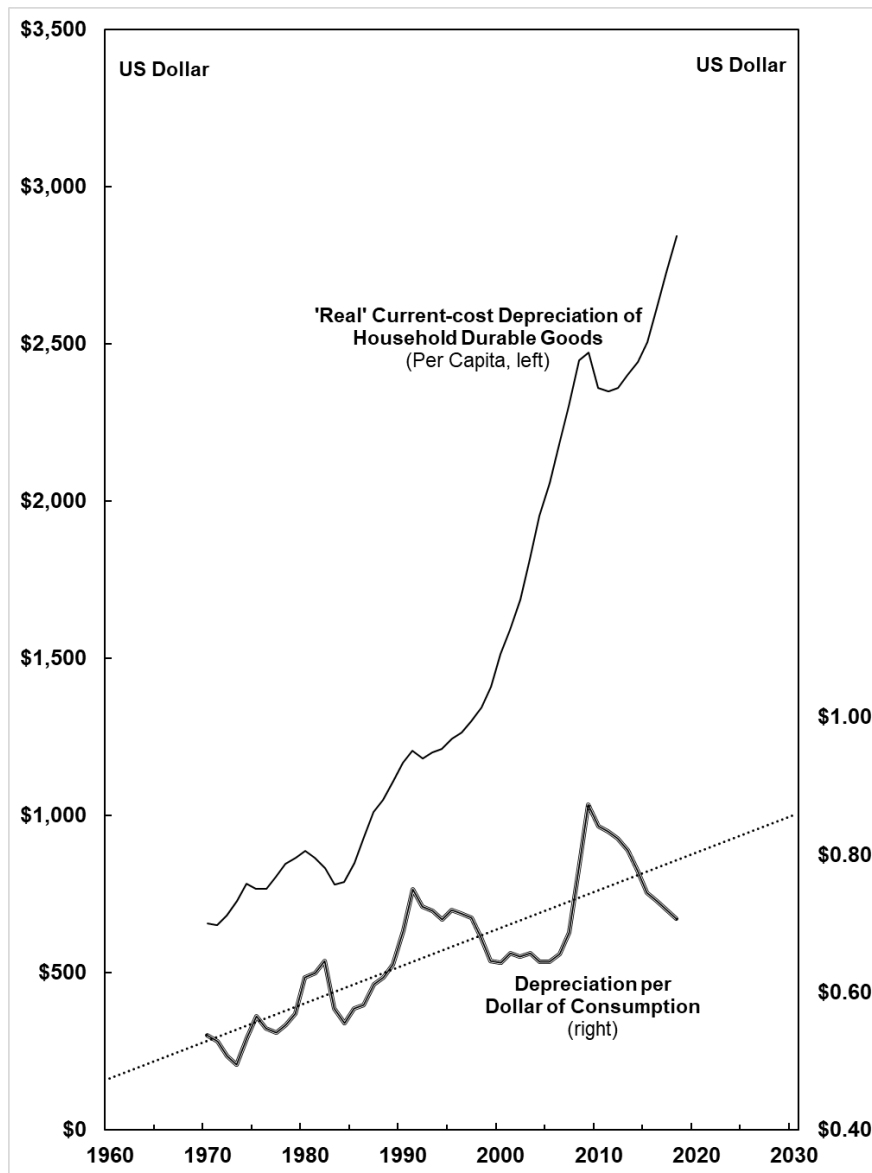


Fig 1.2: Per Capita 'Real' Current-Cost Depreciation of Household Consumer Durables (Appliances and Furnishing) and Depreciation per Dollar of Consumption.

Source: (US) Federal Reserve Economic Data: Personal consumption expenditures – Durable goods (DFDHRC1Q027SBEA); Current-Cost Depreciation of Consumer Durable Goods (M1CTOTL1CD000). US Population Data from Global Financial Data (POPUSA). CPI Data from FRED (CUSR0000SAD).

Trended in this chart is the inflation adjusted per capita dollar amount of depreciation of household durable goods held by US households, as estimated by the United States Bureau of Economic Analysis (BEA). As the BEA measures household durables depreciation as estimated geometric decline in capital value of existing household durables capital

stock, rather than as a rate of disposal¹⁷, this indicator provides an invaluable and underutilized metric to analyze the relative rates of declining durability or, more properly, accelerating depreciation, of consumer durables over time.

Also trended is a differential index which demonstrates household durables depreciation relative to consumer spending within this same category. This differential index is calculated by dividing per capita depreciation by per capita consumer spending, both adjusted by annual CPI, in order to return the adjusted amount of household durables depreciation per dollar of household durables consumption. The differential index here measures the ratio of acquisition of new capital by households (spending) to consumption of existing capital stock through means other than disposal (depreciation) where the higher the ratio of spending to depreciation, the more new capital is required to replenish depreciated capital.

The total amount of book value depreciation within the consumer durables category held by US households has been on the steady increase, particularly since the early 2000s. However, the real indictment is provided here by the differential index. Expressed in 'real' terms, in 1970 the average US consumer could expect to be the proud 'owner' of about \$0.54 of household durables book value depreciation for every \$1 of new expenditure within the same category. In 2018, that same consumer would be carrying about \$0.71 of book value depreciation for every \$1 of expenditure, an increase of 31%. This indicates that the rate of depreciation is growing at a faster rate than consumer spending, and suggests that the rate of depreciation, not just the volume, has trended upwards since 1970.

The differential index of depreciation to consumer spending within the household durables category can be better qualified by a few considerations. One key consideration is to view this index with the rapidly increasing per capita volume of waste in mind. While it might be tempting to hypothesize that the increasing amount of depreciated book value held by US households is reflective of households holding on to older items for longer periods of time, this hypothesis does not square with rising consumer spending and increasing amounts of durable waste being generated by US households, which indicate ever increasing levels of consumption and disposal. Another key consideration is the advances in materials science and manufacturing technology which have occurred in the period examined by the

¹⁷ As per the BEA data dictionary, 'Current-Cost Depreciation of Consumer Durable Goods' is calculated as 'the cumulative value of past investment less the cumulative value of past depreciation'. Accordingly, 'estimates of depreciation are based on a geometric decline [obtained through] empirical studies on the prices of used assets in resale markets' while 'historical-cost valuation measures the value of fixed assets in the prices of the periods in which the assets were purchased new'. <https://www.bea.gov/resources/learning-center/definitions-and-introduction-fixed-assets>.

differential index. The period of time since 1970 has seen spectacular breakthroughs in the field of materials science, ranging from polyethylene becoming widespread in many consumer and industrial contexts, to the epoch-making integration of the silicon transistor into consumer durables. That the rate of depreciation for household consumer goods has trended *upwards* during a period of unprecedented advances in materials engineering is grounds to pose the question of whether manufacturers are truly maximizing their technological capacity and efficiency.

Returning to the first claim made by the 'planned obsolescence' theory, it seems we have very good reason to suspect that manufacturers are not actualizing their full technological potential to create optimal goods. Rather, it appears that the goods they are producing today are designed to depreciate at a faster rate than they were in 1970. A theoretical assessment of why this might be the case will follow shortly. First, however, it is necessary to assess the second claim made by the 'planned obsolescence' theory: that this inferior durability is employed in the service of greater profits. To achieve this, an analysis of the earnings trajectory of listed US firms in two major household consumer durables manufacturing sectors is necessary: household electronic appliance manufactures, and household furnishings manufacturers.¹⁸

Fig 1.3 examines the 'real' (annual CPI adjusted) earnings of US firms operating within these two NAICS classified industrial sectors, revealing a trend which offers insight into the increasing rate of depreciation and rising tide of waste: total earnings have trended sharply upwards while earnings margins have remained largely static.

¹⁸ NAICS sectors numbered 3352 & 3371 respectively.

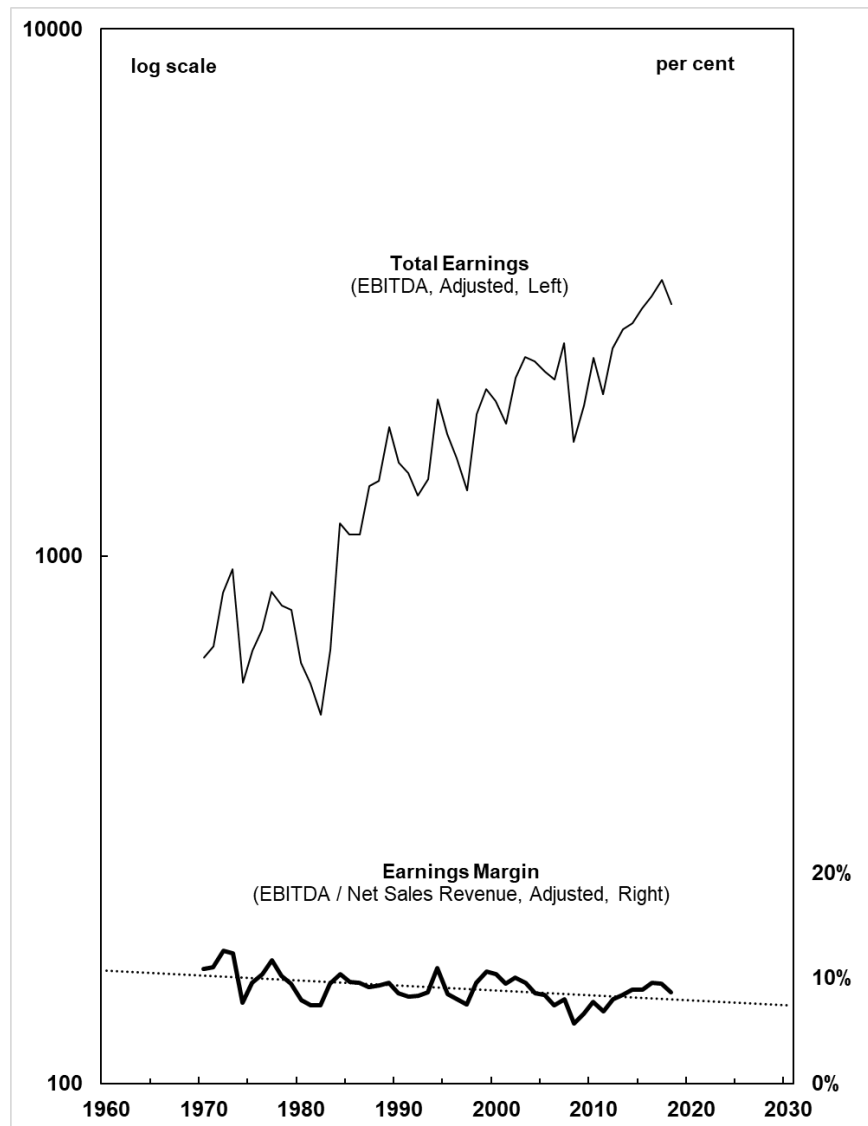


Fig 1.3: Total Adjusted EBITDA & Adjusted Earnings Ratio for Household Electronics Appliance and Furnishing Manufacturers in the US

Source: Compustat North America Annual Fundamentals, EBIDTA and SALE for NAICS Groups 3352 + 3371. Adjusted for Inflation using the FRED CPI Series: (CUSR0000SAD).

What is immediately clear from *Fig 1.3* is that household durables manufacturers have seen substantial earnings increases since 1970 which parallel the growth of household durables depreciation. Most surprisingly, there is a demonstrable, albeit weak, positive correlation between the growth rates of the two variables. The Pearson correlation coefficient between the five-year trailing average annual growth rates for (a) per capita household durables depreciation and (b) annual EBITDA for household durables manufacturers in the US, 1970-2018, is **0.14**. While this is a relatively weak positive correlation, the discovery of any positive correlation between the two variables is quite surprising when considering that the two variables, in the normative liberal account, ought to be negatively correlated.

Were the liberal account to hold, the growth rate of the stock of household consumer durables depreciation would be a factor of households holding on to older goods for longer and, by extension, decreasing expenditure to replace depreciated goods. As a result, the expectation would be that years with high growth rates in book value depreciation would correspond to years with decreased household expenditure and therefore decreased profits in the household durables manufacturing sector. The demonstration that respective growth rates in depreciation and profitability are *not* negatively correlated presents a challenge to this view.

The apparent strategy employed by firms in this sector to increase earnings lends evidence to the theory of 'planned obsolescence'. While total inflation adjusted earnings by household durables manufacturing firms increased by more than 368% between 1970 and 2018, the earnings margin (EBITDA divided by net sales revenue) of these firms remained relatively static. Assuming there are two fundamental ways for firms to increase total earnings, either by increasing earnings margin per sale or by expanding total sales, it is abundantly clear that firms in this particular manufacturing sector have expanded earnings via the latter method. While the growth in total earnings of household durables manufacturers over this period can be at least partially imputed to population growth, as household durables are relatively inelastic staple goods for homeowners, the growth of total earnings greatly outpaces the 60.9% increase in the United States population between 1970 and 2018, requiring additional factors to be considered. It appears that consumer durables manufacturing firms have overwhelmingly moved to increase earnings through business practices which expand total sales, rather than seeking to markup pre-existing sales volume. 'Planned obsolescence' through deliberately decreasing product durability is one such practice which expands total sales rather than earnings margins.

A more ideal way to analyze the interdependent growth of earnings and sales volume in the consumer durables manufacturing sector would be to examine the earnings per manufactured unit. If the theory of 'planned obsolescence' were to hold true, it would be expected that total earnings would increase as earnings per unit manufactured decreased. However, due to the substantial changes in the nature of consumer durables manufactured since 1970 it is exceedingly difficult to procure accurate unit manufacturing statistics within the consumer durables category as a whole. Thus, the much more readily available data on the inflation adjusted net sales revenue of this sector is used as an imperfect proxy for a manufacturing volume denominator in order to assess the numerator of earnings.

Returning to the two key claims made by the theory of 'planned obsolescence', it can be demonstrated that both hold up to empirical examination of trends in the United States since 1970. The depreciation rate for household durable goods has increased alongside the growth of earnings for household durables manufacturing firms in a positively correlated pattern. This growth of depreciation has outpaced the growth of consumer spending, lending evidence to the notion that household durables are depreciating at ever faster rates. Finally, consumer durables manufacturing firms have grown their earnings through an expansion of total sales, rather than through increasing margins. Fitting these lines of evidence together, the hypothesis that consumer durables manufacturing firms have deliberately decreased the durability of their products in order to generate higher sales volume through increased replacement buying by consumers appears to be consistent with the data examined here.

Enter Sabotage

The implications of 'planned obsolescence' are troubling. They suggest that manufacturers are not utilizing scientific breakthroughs in materials science to allow for greatly increased durability for most consumer durable goods. Rather, it appears that the durability of consumer durable goods are in decline despite these innovations. Irrespective of this decline in durability, the manufacturers of these goods appear to be becoming wealthier as their earnings are ever increasing. What can account for this situation?

Both Neoclassical and Marxian Economics are ill equipped to address this question as they both maintain, despite their differences, an understanding of capital as an inherently productive entity.¹⁹ The notion that manufacturers might be *en masse* deliberately sabotaging their industrial outputs in order to engineer greater earnings is difficult to reconcile with an understanding of industrial production as process which 'naturally' moves towards efficiency via competition between firms, and subject to demand pressures. Rather, a theory anticipating 'planned obsolescence' can be found in the heterodox thought of Thorstein Veblen who, writing at the turn of the 20th century, theorized that the chief binary mechanism which determined market outcomes was not supply and demand, or capital and labour, but rather *creativity and profitability*.

¹⁹ Nitzan and Bichler. *Capital as Power: A Study of Order and Creorder*. Routledge, 2009. p. 248

In brief, Veblen conceived of human creativity and knowledge, summated at any one point in time as the current “state of the industrial arts”, as a totally separate sphere of activity from the aims of a minority to dominate and control this creativity and knowledge in order to extract maximal profits. By controlling access to, and distribution of, creative knowledge and productive capacity, those who control the “industrial arts” can operate these knowledge systems in such a way as to generate the greatest possible profit, rather than actualizing the full potential of a society’s productive and creative capacity.²⁰

Veblen coined the term “strategic sabotage” to refer to “disturbances of the industrial system” by business in order to generate profit.²¹ While Veblen largely focused on the “hindering effect” of sabotage on reducing overall production, he accounts for both increasing and decreasing production, as well as optimal and suboptimal technological efficiency, as outcomes of the process of strategic sabotage. In Veblen’s words, the quantity of industrial traffic, and the serviceability of its outputs, are dictated by the financial motives of business owners:

“Business is carried on for pecuniary gain... the volume and serviceability of the output must wait unreservedly on the very particular pecuniary question of what quantity and what degree of serviceability will yield the largest net return in terms of price.”²²

Thus, Veblen’s conception of “strategic sabotage” does not necessarily imply a *reduction* of industrial traffic. Rather, it implies that this traffic will be conducted exclusively to a pecuniary end irrespective of direction. In the case of contemporary manufacturers of consumer durable goods, their pecuniary ends dictate a general overproduction achieved via systematic inferior production. All in the service of stimulating greater consumer demand and generating greater earnings.

Veblen’s understanding of the direction and volume of industrial ‘creativity’ and production as inherently reflective of the pecuniary aims of their owners, rather than a reflection of total social knowledge and productive capacity, renders comprehensible the decline in durability of consumer durable goods during a period in which materials sciences

²⁰ Veblen, Thorstein. *The Theory of Business Enterprise*. Transaction Books, 1978. contains Veblen’s most succinct description of this theory. Particularly Ch. 3: Business Enterprise.

²¹ Ibid. p. 19.

²² Veblen, Thorstein. *An Inquiry Into The Nature Of Peace And The Terms Of Its Perpetuation*. Gutenberg Ebook. p. 108.

advances ought to have produced the opposite trend. That earnings for these manufacturers have increased during this period indicates that their “strategic sabotage” has achieved its pecuniary aims.

Conclusion

Returning to the preliminary questions posed around what can account for the demonstrable decline in consumer durables usage lifespans, it appears, based on the empirical investigations undertaken here, that ‘planned obsolescence’ is a far more cogent theory than ‘overconsumption’. There has been no demonstrable increase in household consumption commensurate with falling product usage lifespans and rising waste, nor can demand for more disposable, less durable goods be readily attributed to consumers.

Rather, rising rates of depreciation lend indirect evidence to the notion that consumer durable goods have been declining in durability and usage longevity. The persistent increase in total earnings of consumer durables manufacturing firms, even as the earnings margin of these firms remains static, lend direct evidence to the notion that these firms are increasing profitability by expanding total sales volumes rather than earnings margins. Fitting these two pieces of evidence together, the claims made by the theory of ‘planned obsolescence’ become credible, or at least consistent with the facts.

A theoretical understanding of why a situation of ‘general overproduction through inferior production’ might occur can be furnished by Veblen’s theory of ‘strategic sabotage’ of industrial creativity by pecuniarily motivated business owners. While the discussion of Veblen here has been brief, the core concepts of ‘planned obsolescence’ can be found anticipated in much of Veblen’s writing.

A basic empirical and theoretical framework for interpreting declining consumer durables usage lifespans and corresponding rising household waste has been provided here. However, this discussion has been preliminary, and many key questions remain unexamined. Why have consumer durables manufacturers opted to engineer greater total manufacturing volumes rather than expand earnings per unit manufactured? What mechanisms have caused ‘planned obsolescence’ to become a hegemonic paradigm in this industrial sector (if, indeed, it is hegemonic)? Why have some advanced materials technologies become widely incorporated into final consumer durables goods, while others have not? What factors other than ‘planned obsolescence’ might be contributing to falling usage lifespans/rising waste? What

is the role of advertising in driving the cycle of 'planned obsolescence'? All of these questions are worthy of detailed examination and would greatly aid a more holistic understanding of 'planned obsolescence'; a phenomenon which presents significant implications for regulatory policy, and which the ongoing ecological crisis lends a heightened sense of urgency. While novel avenues of inquiry into 'planned obsolescence' have been presented here, much work remains to be done to account for this trend.