

The Challenge of Affluence

Self-Control and Well-Being in
the United States and Britain
since 1950

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Passions and Interests: Self-Control and Well-Being

‘Reason is, and ought only to be the slave of the passions, and can never pretend to any other office than to serve and obey them.’

David Hume, *A Treatise of Human Nature* (1739–40),
Bk. II, pt. iii, sect. 3

For a young woman of 20, life expectation in Britain today is 81, and 76 for a man.¹ Most people can expect to live for a decade or two after withdrawing from work. By setting aside and investing, say, one-fifth of their incomes, they might be reasonably confident of providing for retirement. But even the most cognitively sophisticated do not attempt this task unaided. Academics in Britain submit voluntarily to mandatory payroll pension deductions, which amount to more than 20 per cent of their pay overall.² In the United States, the sum of (mandatory) employer and employee old age, Medicare, and other social security contributions is more than 18 per cent.³ By the early 1970s, nearly everyone in Britain was compelled to save, by means of state and employer payroll deductions, some of them by stealth.⁴ When saving voluntarily, people have also typically placed assets beyond their own reach, in illiquid houses, insurance, or pension accounts.

This discipline sometimes failed to deliver: state pensions have withered, employers have closed their pension schemes, private pensions were mis-sold or mismanaged, while lenders encouraged homeowners to borrow against their equity and even their pensions. With saving becoming more

¹ UK, ONS, *Health Statistics Quarterly*, Table 5.1, 25 Feb. 2004. www.statistics.gov.uk/statbase/Expodata/Spreadsheets/D7628.csv.

² Six per cent deduction, 14 per cent employer contribution. A further ‘national insurance’ deduction gives rise to a small state pension entitlement. Deferred taxation adds to the incentives.

³ Below a pay ceiling. Mulligan, ‘Flat Tax’.

⁴ Which is what employer pension contributions amount to.

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discretionary, young people do not save enough, and for large minorities, savings are insufficient or non-existent.⁵ To close the gap, providers say, 53 per cent more savings are needed in the UK.⁶ It is difficult to look in the future. And yet old age will come to be as real as youth is today.

Modern consumption theory assumes that rational consumers (by definition) make choices that are well informed, far-sighted, and prudent. An attribute of rational choice is *consistency*, namely that if *a* is preferred over *b* then *b* cannot be preferred over *a*. Consumers reveal their preferences by means of market choices, and market choices correspond to their well-being (or 'welfare').⁷ Taking account of the expected value of lifetime wealth, they maximize welfare by smoothing consumption over the life cycle.⁸ An 'invisible hand' then acts to aggregate individual choices to maximize the economic welfare of society.

A great deal is at stake in this model. The primacy of 'revealed preference' as the source of well-being is the conceptual underpinning of liberal society. This doctrine regards the free exercise of market choice as not only economically efficient, but also as a vital human aspiration, suggesting that both social virtue and personal dignity depend on it. Even Amartya Sen, who is second to none in his sensitivity to deprivation and indigence, endows market participation with a human significance quite independent of its instrumental value.⁹ Milton Friedman's credo is 'free to choose':

The possibility of co-ordination through voluntary co-operation rests on the elementary—yet frequently denied—proposition that both parties to an economic transaction benefit from it, *provided the transaction is bi-laterally voluntary and informed*.

Exchange can therefore bring about co-ordination without coercion. A working model of a society organized through voluntary exchange is a *free private enterprise exchange economy*—what we have been calling competitive capitalism.¹⁰

The key assumption is that choice is both *voluntary* and *informed*.

The methods (and failures) of providing for old age suggest that the model is not perfect: that in western affluent societies, most people might not have saved if they had not been forced to. That suggests choice can be *time inconsistent*, or 'myopic'. Priorities for the present (consumption) are

⁵ Summary findings on savings in the USA, Laibson et al., 'Self-Control and Saving', tables 6–8, pp. 137–9.

⁶ Oliver Wyman & Co., 'Future Regulation of UK Savings'; King, 'No Nest Egg'; for the USA, Farkas and Johnson, *Miles to Go*.

⁷ Criticism in Burrows, 'Patronising Paternalism', 544–9.

⁸ Deaton, *Understanding Consumption*, ch. 1; Lord, *Household Dynamics*, ch. 1.

⁹ Sen, *Development as Freedom*, 25–30.

¹⁰ Friedman, *Capitalism and Freedom*, ch. 1, p. 13 (emphases in original).

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in conflict with priorities for the future (saving). Time inconsistency means that the wish to be virtuous tomorrow may not be sustained when tomorrow arrives. If the myopic consumer is 'naïve', he will make a resolution for the future, and simply fail to keep it. If he is 'sophisticated', he knows that he will be as self-indulgent tomorrow as today. External compulsion solves his problem of self-control. Time inconsistency raises the possibility that individual choice may not be sufficiently reliable as the source of personal well-being, and that freedom of choice is not a secure foundation for social well-being.

Here is a list of some self-defeating choices:

- Late to school/truancy/dropping out.
- Smoking/drink-driving/drug addiction.
- Overeating/dieting/eating disorders.
- Gambling.
- Unwanted pregnancy/abortion/marital discord/divorce.
- Marital infidelity.
- Crime.
- Urban/suburban sprawl, congested roads.
- Politicians' campaign promises.
- Chronic budget deficits.
- Undersaving.
- War.

But time-consistency problems are also resolved successfully:

- Punctuality.
- Temperance.
- Saving.
- Investment.
- Homeownership.
- Insurance.
- Education.
- Urban parks, green belts, national parks.
- Vibrant, attractive, liveable cities.
- Abiding friendship, enduring love.
- Stable families.
- Balanced budgets.
- Truthful politicians.
- Secure old age.
- Rule of Law.
- Peace.

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David Hume wrote, 'There is no quality in human nature, which causes more fatal errors in our conduct, than that which leads us to prefer whatever is present to the distant and remote.'¹¹ Striking a balance between immediate and remote satisfactions is a problem as old as civilization. Indeed, civilization may be regarded as a solution. Moralists have traditionally privileged prudence over gratification. In religion, temptation is sin. No such judgement is intended here. Gratification eternally postponed is futile.

At the other extreme, affluence is seen as simply a matter of 'it's getting better all the time'.¹² But good choices are not a trivial issue of maximizing preferences in conditions of affluence. For the unaided individual, inconsistent preferences give rise to intractable dilemmas. Myopic choice is pervasive, but in spite of large conceptual breakthroughs, understanding is still in flux.¹³

Time inconsistency and discounting

For an individual, from the point of view of the present, an asset delivered tomorrow is worth less than its value today. The value today of a future benefit is calculated by discounting it *at a constant rate* for every period of time. At a 5 per cent discount *rate*, an asset worth unity now is worth only 0.95 if it is expected to be delivered in $t + 1$, 0.902 in $t + 2$, 0.857 in $t + 3$, etc. (the fraction is the discount *factor* at time t). This is 'exponential discounting'.¹⁴ If it is the only good (or all goods, i.e. 'utility'), then the discount rate represents a 'rate of time preference' for the present over the future. The higher the rate, the less a given future benefit is worth today. To maximize a person's well-being only requires markets in which choices are reliably delivered. Between two rewards, at any given point in time, the 'exponential' discounter always makes the same choice, whether delivery is today or tomorrow. At her chosen discount rate, she is also indifferent between the present and the future. That is the sense in which exponential discounting is *time consistent*. Expected utility theory (which embodies exponential discounting) is hegemonic in economic analysis.¹⁵

¹¹ Hume, *Treatise of Human Nature*, Bk. III, pt. ii, section vii.

¹² Moore and Simon, *It's Getting Better*; Lebergott, *Pursuing Happiness*.

¹³ What follows is not comprehensive. For surveys, see Loewenstein and Elster, *Choice over Time*; Elster, *Ulysses Unbound*; Ainslie, *Breakdown of Will*; Loewenstein et al., *Time and Decision*.

¹⁴ A brief account in Frederick et al., 'Time Discounting', 355–60. More detail, Schoemaker, 'The Expected Utility Model'.

¹⁵ Schoemaker, 'Expected Utility Model'; Frederick et al., 'Time Discounting', 351–9; Price, *Time, Discounting and Value* is thoughtful, mostly non-technical, and very informative.

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But it is often wrong. People indulge in hedonic gratification, even at a large cost in the future. Conversely, they will also commit to benefits so remote (like a slow-growing tree), that an exponential discounter would value them at zero. This type of behaviour is captured by an alternative model, of 'hyperbolic discounting'. In this model, the future is discounted not at a constant rate, but at a varying one, usually a declining one. Between the present and the immediate future, value is discounted at a high rate, but for more remote future payoffs, the discount curve levels off. Given a immediately, the hyperbolic discounter will go for it, rather than wait for the larger b . But if delivery is delayed, she prefers the large b over the small a . Depending on *when* the payoff occurs, she prefers either a or b . The hyperbolic discounter is *inconsistent*. This dilemma has always been known, but its recent rediscovery in economics and psychology (some fifty years ago) has recently made it more salient.¹⁶

The 'rational' and 'inconsistent' approaches to intertemporal choice can each be described in terms of simple mathematical models.¹⁷ In exponential discounting, the current value of a future benefit is calculated by

$$V = \frac{B_t}{(1 + r)^t}$$

V is the current value of benefit B at time t . r (<1) is the discount rate in each period. Value declines at a constant percentage from one period to another.

In hyperbolic discounting, present value is inversely related only to time. In a very simple form, the equation describing hyperbolic discounting is:

$$V = \frac{B_t}{(1 + kt)}$$

Where V is again the present value, B is the benefit at time t , k is a constant which expresses the intensity of time preference, and t is the number of time units. 1 is added to kt to prevent V from rising to infinity at $t = 0$, when there is no delay. Value declines with time, not at a constant rate, but at a declining rate, more steeply at the start, and more slowly thereafter.

Figure 3.1 represents the two equations, at (a) short and (b) long delays. For exponential discounting, the discount rate has been set at 0.15 (15%). For hyperbolic discounting, the constant (k) has been set to 1. The two

¹⁶ Fredrick et al., 'Time Discounting', 366–8; Chung and Herrnstein, 'Relative and Absolute'; Ainslie, 'Specious Reward'.

¹⁷ There are several different representations of both approaches. I present the simplest.

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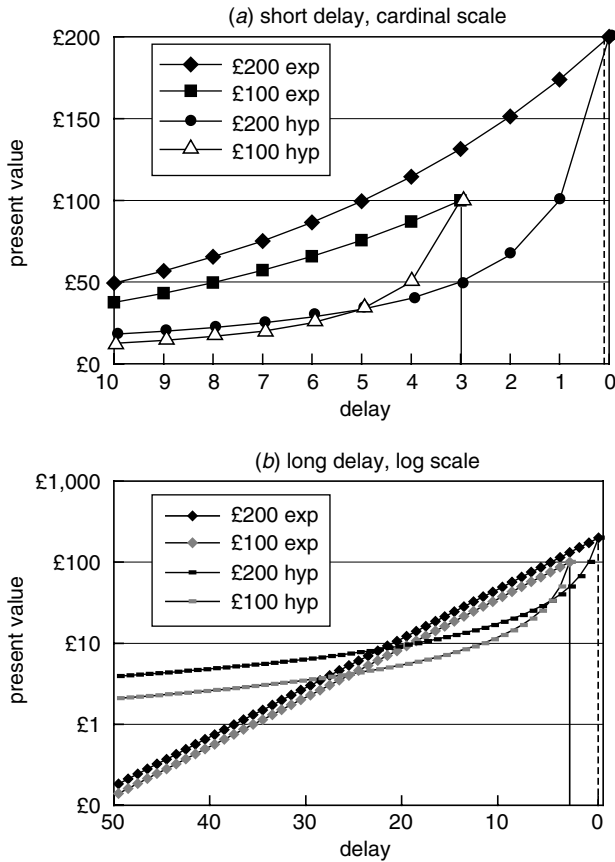


Fig. 3.1. Exponential and hyperbolic discounting of £100 and £200 at different delays

Note: Exponential discount rate = 0.15, $k = 1$.

models, exponential and hyperbolic discounting, are 'ideal types', which capture some of the attributes of real choices. Figure 3.1(a) shows the present value of two assets, worth £200 and £100 respectively, at delays of $t = 10$ (broken vertical line) and $t = 7$ (solid vertical line) respectively. The top two curves are the exponential discounting curves, the bottom two are the hyperbolic discounting ones.

Exponential discounting describes the values at which the owner is indifferent between immediate and delayed possession. The discount rate ($r = 0.15$) determines the slope, and expresses the intensity of the hedonic preference. The large reward is always preferred to the smaller one. Under hyperbolic discounting, however, there is a cross-over point at $t = 5$, when

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the smaller reward becomes more compelling. Value rises at a faster rate as delivery approaches. Exponential discounting can be highly myopic without being inconsistent. When the discount rate is very high (as with addicts) a small reward now might still be preferable to a large one later. Nor is it always the case that hyperbolic discounting is the more myopic. When delays are long (Figure 3.1(b)), hyperbolic discounting crosses over, and places a positive value on very distant rewards, which would decline down to nothing under exponential discounting.

Some writers regard exponential discounting as representing normative rationality: hyperbolic discounting is inferior. 'Mr Exponential could buy Ms. Hyperbolic's winter coat cheaply every spring', and sell it back to her at a high price next winter.¹⁸ Others deny this, and find arguments from evolutionary theory and animal behaviour, from logic, or from imperfect information, to reconcile hyperbolic discounting with rationality.¹⁹ On one view there is no substantive difference between the two discounting models as descriptions of choice,²⁰ or that the preferences of the hyperbolic discounter should be respected, and that they exclude an external viewpoint which would allow an 'objective' choice.²¹ One enduring view even regards discounting as unjustified, given that both present and future are equally real, and takes the appropriate time preference to be zero.²²

Discounting is real, but it does not necessarily represent an overarching psychological 'time preference' for the present over the future. There are other reasons to discount: (a) delivery is uncertain: death might intervene; (b) diminishing marginal utility: as the subject becomes wealthier, he may value the reward less; (c) the unit of delivery is not the same as the unit of calculation, e.g. due to inflation; (d) incompleteness of options, due to proliferation of outcomes with time, including some not available when choices were made; (e) unstable preferences due to habits building up, heightened (or diminished) anticipation, temporary impulses, infatuations or repulsions, or life-cycle unfolding of preferences and tastes; (f) cognitive biases, e.g. small sums are discounted more than large ones, gains more than losses, preferences for rising rather than smooth incomes, or, indeed, hyperbolic discounting itself;²³ (g) exponential discounting assumes that

¹⁸ Ainslie, *Breakdown of Will*, 30–1. Mulligan, 'Logical Economist'; Laibson, 'Life-Cycle Consumption'.

¹⁹ Kacelnick, 'Evolution of Patience'; Read, 'Subadditive Intertemporal Choice'; Fernandez Villaverde and Mukherji, 'Can We Really Observe?'

²⁰ Rubinstein, 'Economics and Psychology'. The 'quasi-hyperbolic' model used by Laibson and others is an exponential curve starting at time 1 rather than time 0.

²¹ Schelling, 'Self-Command in Practice'.

²² Survey in Price, *Time, Discounting and Value*, ch. 7.

²³ *Ibid.* 103–14; also Frederick et al., 'Time Discounting', 363–4, 380–4; Frank, 'Wages, Seniority'.

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putative revenues are reinvested at a constant rate of return, but if revenues are not financial, they cannot be reinvested.²⁴

If discounting is not an overarching rate of substitution between different periods of time, but is attached to particular goods, then time inconsistency arises again. In practice, different goods are often associated with different discount rates. Think of them as different half-lives, from the very short to the very long. Perishable goods are more compelling than durable ones. If not consumed, they are lost. Passions do not keep well in storage. Novelty depreciates by definition. Empirical studies show a wide range of discount rates, and these are already averages over heterogeneous individuals, heterogeneous goods, heterogeneous attributes, and heterogeneous time horizons. No evidence of uniformity there.²⁵ For example, when time preferences for health are examined (e.g. as between prevention and cure) 'decision makers apparently do not have a consistent time preference trait that can be measured or manipulated in one setting and used to predict or influence health behaviour in another'.²⁶

When governments make investments, they do not use a single time preference. Different discount rates for different payoffs at different time horizons are broadly accepted policy practice. In the United States, different agencies use different discount rates, depending on the project and the time horizon expected.²⁷ This is unavoidable, since typical market rates of return exclude projects beyond twenty to thirty years. Since its introduction in the 1960s, the UK government 'test discount rate' has varied at different times between 8 per cent and 3.5 per cent real.²⁸ Of the latter, only a small proportion (between 0 and 0.5 percentage points) represented pure time preference. The British Forestry Commission used discount rates ranging between 1 and 10 per cent at the same time for different types of activities.²⁹ For longer-term discounting, the UK Treasury has recently accepted a declining discount rate, falling down to 1 per cent at a time horizon of 301 years. Since only exponential discounting is time consistent, government choice (like that of private individuals) is also prone to the dilemmas of time inconsistency.³⁰

²⁴ Price, *Time, Discounting, and Value*, ch. 6.

²⁵ Frederick et al., 'Time Discounting', 377–80; Price, *Time, Discounting and Value*, 100; Soman, 'Effect of Time Delay'.

²⁶ Chapman, 'Time Discounting', 413.

²⁷ Price, *Time, Discounting and Value*, 118; Henderson and Bateman, 'Empirical and Public Choice Evidence'; Bazelon and Smetters, 'Discounting inside the Washington D.C. Beltway'.

²⁸ Unpublished work by Martin Chick; Great Britain, HM Treasury, 'The Test Discount Rate'; Spackman, 'Discount Rates'; Great Britain, HM Treasury, *Green Book*, 1997, 2003; Great Britain, 'A Social Time-Preference Rate'.

²⁹ Price, *Time, Discounting and Value*, 118.

³⁰ Hepburn, 'Hyperbolic Discounting'.

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Ainslie, an imaginative and inspiring pioneer of hyperbolic discounting, first observed it in pigeons, and assumes that 'hyperbolic discounting' comes naturally: it is the innate mode of perceiving time. In physiology and psychology, a widely accepted principle is that the intensity of sensual experiences declines with distance (the Weber–Fechner rule).³¹ From this point of view, both the past and the future recede just as steeply.³² Consistent with this view, the past is not available in its totality—experience selects out of 'peak' and terminal experiences—which is consistent with a retrospective Weber–Fechner rule.³³ Remorse about large expenditures declines as they recede into the past.³⁴ The atrophy of the past means that it is difficult to learn from experience.³⁵

The hyperbolic discounting curve is at best a description, not an explanation. Instead of being a particularly skewed version of foresight, the privileging of the present can also be conceptualized as the immediate response to innate, 'visceral' emotions of irresistible desire, shame, or anger, to external provocation or stimulation.³⁶ In one research programme, children were offered a choice between one sweet immediately, or two with a short delay. A minority of children were able to choose delayed rewards, mostly by controlling the internal visualization of enticing images. In subsequent life courses the prudent children had more successful careers.³⁷ Another approach to visualization implies a (Weber–Fechner) perceptual gradient, arguing that 'The greater the temporal distance from future events, the more likely are the events to be represented in terms of a few abstract and essential features (high-level construals), rather than in terms of more concrete and superficial features (low-level construals).'³⁸ Desires can be classified as being 'hot' or 'cold'—immediate and pressing, or long-sighted, capable of calculation and delay, and more rewarding objectively.³⁹ The mere passage of time can lower the temperature of desire. This is captured by the common advice to 'sleep on' a decision, and by the 'cooling off' periods which permit withdrawal from consumer contracts. There is some progress in identifying the physiological, brain location, and biochemical attributes of impatient preferences.⁴⁰

³¹ Ainslie, *Breakdown of Will*, 35; Poulton, *Quantifying Judgements*. There is some debate about the appropriate model, whether logarithmic or power-law.

³² Price, *Time, Discounting, and Value*, 114–15; Pigou, *Economics of Welfare*, Pt. I, ch. 2, par. 3, p. 25.

³³ Kahneman, 'Experienced Utility'. On retrospective evaluation, see Ariely and Carmon, 'Summary Assessment'.

³⁴ Heath and Fennema, 'Mental Depreciation'.

³⁵ Kahneman, 'New Challenges'.

³⁶ Loewenstein, 'Out of Control'.

³⁷ Mischel et al., 'Delay of Gratification'; Shoda et al., 'Predicting Adolescent Competencies'.

³⁸ Liberman and Trope, 'Construal Level Theory', 236.

³⁹ Mischel et al., 'Sustaining Delay of Gratification'.

⁴⁰ Manuck et al., 'Neurobiology of Intertemporal Choice'.

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If the present is compelling, then commitment to the future is difficult. Choice is genuinely intractable—rather like those forbidden ‘interpersonal comparisons of welfare’ in orthodox welfare economics. Rewards at different time horizons can be compared to different interests of the same person. Time inconsistency is an expression of a ‘divided self’, of preferring, for example, indulgence for the immediate self, and prudence for the future one.⁴¹ But prudence in the future is likely to be rejected when that future arrives. The long-term, ‘cold’ interest would like to find a strategy to lock the immediate, ‘hot’ interest into the long-term priority. Commitment might be seen as a bargain between two interests, each mobilizing their resources to achieve the best outcome for both.

This bargain is managed in two ways, *intrinsic* and *social*. Intrinsic mental commitment is a promise enforced by means of psychic self-disciplines, such as control of attention, clear behavioural rules, and ‘bright lines’ that make it easier to define the objective and achieve it.⁴² ‘Attention control’ involves avoiding exposure to the reward, as when a glutton keeps the home clear of chocolate. Another psychic strategy is ‘personal rules’, e.g. ‘no eating between meals’. Successful strategies provide ‘bright lines’, e.g. in the case of the glutton, a clear definition of what constitutes a ‘meal’, and closing of any ‘loopholes’ that lie beyond this boundary. An effective strategy is giving psychic ‘hostages’, (or placing ‘side-bets’), by specifying in advance a high penalty for failure. A lapse then not only defeats the objective, but also damages self-credibility and self-esteem. Conversely, however, persistent failure, can lead to lasting harm to self-esteem.⁴³

Social methods of commitment rely for enforcement on third parties. In a recent experiment, students produced better work against self-imposed deadlines than with no deadlines, but the best work was produced with deadlines that were imposed from the outside.⁴⁴ In contracts like insurance, mortgages, deposit accounts, and pension plans, compliance is monitored impersonally, and lapses are punished by loss. Money and contracts provide a set of ‘bright lines’. Informal but binding social pressures are also effective: Alcoholics Anonymous and Weight Watchers combine intra- and interpersonal commitment. In the case of celebrities, the transgression of marriage by extra-marital affairs, for example, is punished at a heavy cost in money and shame.

⁴¹ This framing of the problem dates back to the originator of modern discussion, Strotz, ‘Myopia and Inconsistency’.

⁴² Ainslie, *Picoeconomics*, 133–5; Schelling, ‘Intimate Contest for Self-Command’; Schelling, ‘Self-Command in Practice’; Rabin, ‘Moral Preferences’.

⁴³ e.g. Green, *Diary of a Housewife*.

⁴⁴ Ariely and Wertenbroch, ‘Procrastination, Deadlines, and Performance’.

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Tried-and-tested commitment strategies, whether psychic or social, might be described as 'commitment technologies', or 'commitment devices'.⁴⁵ Numbers, the calendar, time—are all commitment devices.⁴⁶ The Sabbath rest day controls the compulsion to work. The mechanical clock was initially a public, interpersonal commitment device, then a private, intra-personal one; alarm clocks help with the micro-commitment problem of getting up, the snooze control with the pico-commitment problem of ignoring the alarm.

Commitment technologies underpin the capacity to undertake a sustained task. They arise in history, evolve, do useful work, and decline. The right to mint or print money has always given rise to the temptation of excess. The nineteenth-century gold standard was a commitment technology, which broke down under the compelling immediacy of war. The doctrines and practices of central banking have evolved over two centuries, converging recently on the device of an independent central bank. Exponential discounting is a financial commitment technology. The cost of medical care under the traditional American 'fee for service', paid to the doctor up front by the sick patient at the point of need, is higher than where medical fees are determined in advance by healthy administrators, as under the British Health Service, or American Health Maintenance Organizations (HMO). The heavy investment in advertising and branding (more than 2 per cent of national income in the United States) is an effective way of locking consumers into consumption habits, and of solving the intractable problem of consumer choice in conditions of abundance.⁴⁷ Coca-Cola or Chevrolet have been as much of a commitment, as much a part of the fabric of American life, as churchgoing.

Statutory law restricts the range of choice in advance, for rulers and subjects alike. Constitutions bind legislators, to protect long-term preferences against temporary advantage (or to lock in temporary advantage into the future). The building-blocks of society can be seen as clusters of intertemporal strategies and technologies. Personality, class, family, culture, ideology, policy, national character: all of them constitute sets of priorities at different ranges of time. All of them constrain the freedom of choice.

For the individual, society helps to achieve self-control. For society, an individual's failure to commit constitutes a nuisance. The criminal, the truant, the latecomer impose costs ('externalities') on other people. A failure to cooperate hurts not only the defector, but also those who might have

⁴⁵ The terms are current in monetary economics. See also Brocas et al., 'Commitment Devices'.

⁴⁶ Zerubavel, *Hidden Rhythms*.

⁴⁷ The consequences are discussed in more detail below, Chapter 6.

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gained from his cooperation. Typically, commitment technologies are not devised by individuals seeking to control their own vices, but by social agencies controlling the vices of others. By analogy, a psychic myopic equilibrium such as addiction is deemed to be an 'internality', an inconsistency which consumers inflict on themselves.⁴⁸

Equilibrium must always be found, if only by default, but the dilemma is not easily tractable. In his poem 'A Feaver' John Donne says to the woman, his lover,

I had rather owner bee
Of thee one houre, than all else ever.⁴⁹

But when 'one houre' is over, and 'ever' arrives, is the deal still going to look so good? Of the two interests, the 'hot' and the 'cold' ones, 'the question, which is the authentic one, may define the problem wrong. Both selves can be authentic . . . the problem seems to be distributive, not of identification.' Is an hour of extreme pleasure worth more than the rest of life? 'The conclusion that I reach', says Thomas Schelling, 'is that I do not know, not for you and not for me.'⁵⁰

It is possible to overcommit.⁵¹ Anorexia/bulimia, vows of celibacy, teetotalism, and the pursuit of honour, are examples of overcommitment. In late Victorian Europe, an insult required an upper-class person to 'demand satisfaction' by means of a duel. This may have restored social approbation in the present, but at the cost of a high-risk gamble on injury or death shortly afterwards.⁵² Ainslie calls these forms of excessive commitment 'compulsions'.⁵³

A straightforward measure of prudence is saving. A hyperbolic saver wants to spend now and to save later. But when 'later' arrives, he wants to spend again. With a perfect (and costless) commitment technology, he would precisely match the saving level of an exponential saver. If a commitment technology is available at reasonable cost, he will try to lock his savings for release in the future. Society abounds with commitment devices and technologies, so it is not easy to characterize saving behaviour as either exponential or hyperbolic. Laibson has carried out simulations in which both exponential and hyperbolic models of saving are calibrated to

⁴⁸ O'Donoghue and Rabin, 'Addiction and Self-Control', 171, 176; Loewenstein and Elster, *Choice over Time*, p. xxi; Herrnstein et al., 'Utility Maximization'.

⁴⁹ John Donne, 'A Feaver', in Donne, *Selection*.

⁵⁰ Schelling, 'Self-Command in Practice', 9. He uses an example of a man who is forced to undergo a painful procedure in order to save his life.

⁵¹ Ameriks et al., 'Measuring Self-Control'.

⁵² Offer, 'Going to War: A Matter of Honor?'

⁵³ Ainslie, *Breakdown of Will*, 50-1; in earlier work he calls them 'sell-outs'.

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match observed savings behaviour. These simulations suggest that hyperbolic discounters can be quite successful in putting off consumption. But since commitment is not perfect, the simulated hyperbolic discounter falls short (about as much as the real saver claims to fall short of his own targets). In one of these simulations, the shortfall from optimizing exponential saving level models is estimated at almost a year's income.⁵⁴ While an exponential discounter would smooth consumption over the lifetime, a hyperbolic one would spend some of the expected increase in income when it occurs. The actual increase of spending of expected income matches the hyperbolic model.⁵⁵

In terms of the gap between consumption and income, there is not much to choose between the two models. But on other attributes, a difference emerges. The hyperbolic discounter is predicted to have low liquid assets (because of splurging and under-commitment), and also high credit card debts. Simulations confirm this pattern. In fact, behaviour is even more 'hyperbolic' than simulations suggest. In the USA in c.1980–1992, only about 10 per cent of assets were held in liquid form (as against simulations of 50 per cent (exponential) and 39 per cent (hyperbolic)). And credit card debts at an average \$5,000 per household are more than five times as high as exponential discounting would predict.⁵⁶

To summarize the argument so far, if myopia is natural, and time consistency is desired, then achieving it requires a cognitive and psychic effort, and access to social commitment technologies is costly. As Adam Smith put it, commitment required two separate attributes, both of them scarce, namely 'reason' and 'self-command'.

The qualities most useful to ourselves are, first of all, superior reason and understanding, by which we are capable of discerning the remote consequences of all our actions, and of foreseeing the advantage or detriment which is likely to result from them: and secondly, self-command, by which we are enabled to abstain from present pleasure or to endure present pain, in order to obtain a greater pleasure or to avoid a greater pain in some future time. In the union of those two qualities consists the virtue of prudence, of all the virtues that which is most useful to the individual.⁵⁷

Far from being costless (as assumed in standard consumption theory), overcoming time inconsistency is difficult, and carries a heavy psychic and social transaction cost.⁵⁸ For example, the private pension accounts managed

⁵⁴ Laibson, 'Life-Cycle Consumption', 868–70.

⁵⁵ Angeletos et al., 'Hyperbolic Consumption Model', 534–5.

⁵⁶ Ibid, 531–3.

⁵⁷ Smith, *Moral Sentiments*, Pt. IV, ch. 2, par. 6, p. 189.

⁵⁸ The cost of commitment is explicitly modelled in Gul and Pesendorfer, 'Temptation and Self-Control'.

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by financial institutions typically incur an annual management fee of more than 1 per cent, and these fees can claim a third or more of savers' contributions.⁵⁹ Delaying consumption incurs an additional commitment cost which reduces the ultimate value of the postponed benefit. This, by the way, provides yet another reason for discounting.

Prudence and social position

If commitment technology is costly, it is more readily available to those who are better off. How costly? Well, precisely \$149.95. That is the price of *ESPlanner*TM, 'a unique patented financial planning software package based on the life-cycle model of saving'. This is the same lifetime consumption smoothing that rational consumers are supposed to be doing costlessly, but as the authors explain, 'Solving the problem of both maximizing and smoothing your household's living standard over time and across survival contingencies is not easy. *ESPlanner* uses a patented dynamic programming method to solve this problem.' It took a decade to develop.⁶⁰ This underlines the point: commitment is both difficult and expensive. The authors are senior professors, access sets a high cognitive threshold, and it is just a tool. Willpower is not included. And what did people do before it was invented?

The capacity for commitment is built up by education. Like a muscle, it can be trained and strengthened (and also exhausted by use).⁶¹ Larger financial savings are achieved with a college or postgraduate education.⁶² Discount rates are highest for high-school dropouts, decline sharply in high-school graduates, and are lowest among college graduates.⁶³ Comparing one group with another (and not specific individuals), we shall argue that, at any given point in historical time, those who are better off are likely to show more capacity for self-control. Prudence is essentially a bourgeois attitude. Not the very rich, who are secure in their assets, nor the very poor, who have little long-term prospect of gain. This bourgeois virtue is underpinned by the infrastructure of legal and financial institutions, and by the 'bright lines' of bourgeois virtue, namely money.

⁵⁹ Offer, *Public Sector*, p. 3, n. 11; Kotlikoff and Burns, *Coming Generational Storm*, table 8.1, p. 199.

⁶⁰ Economic Security Planning, *ESPlanner*TM, 2, 5.

⁶¹ Baumeister and Vohs, 'Willpower, Choice'.

⁶² Lord, *Household Dynamics*, fig. 1.9, p. 26; Gourinchas and Parker, 'Consumption over the Life Cycle', fig. 3, p. 68; table IV, p. 77.

⁶³ Laibson et al., 'Self-Control and Saving', table 4, p. 121.

Self-Control and Well-Being

For the classical economists of the eighteenth century, prudence and thrift were necessary in order to accumulate wealth. But wealth gave rise to temptation, temptation to indulgence, and indulgence ate up the wealth.⁶⁴ Affluence instigates a conflict between passion and reason. At the end of the eighteenth century, Malthus thought that sexual desire would keep the population growing as fast as the economy, and keep most people down to the level of poverty. To escape this trap, it was necessary to bring the urges of sexual attraction under control. The idea that restraint is necessary for wealth to accumulate was a staple of Victorian morality, and resonates through Victorian economic thought, from John Rae's condemnation of improvidence, through Nassau Senior's 'abstinence', Jevons's 'foresight', and Böhm-Bawerk's 'waiting'. Max Weber's prudential 'Protestant Ethic' is linked in the same way with the 'spirit of capitalism'.⁶⁵ Recently, Becker and Mulligan have once again argued that wealth induces self-control.⁶⁶

Conversely, improvidence was associated with the poor.⁶⁷ For Irving Fisher this fecklessness was partly rational: 'a small income, other things being equal, tends to produce a high rate of impatience, partly from the thought that provision for the present is necessary . . . and partly from lack of foresight and self-control.'⁶⁸ Post-war American social science described lower-class behaviour in America as 'impulse following' rather than 'impulse renunciation', though it was not clear whether poverty arose from excessive desires, or whether people yielded to desire because they were poor. During the last fifteen years, myopia and poor self-control have been implicated in an influential theory of crime.⁶⁹

The extent of 'hand to mouth' living can be estimated by measuring liquidity constraints at different levels of education and age. Liquidity constraint (i.e. absence of ready assets) declines substantially as education rises. One interpretation is that education provides a stronger capacity for psychic self-control, and hence less reliance on external self-commitment devices. Consumption surveys indicate much higher levels of 'hand to mouth' consumption than either exponential or hyperbolic models suggest, but the hyperbolic model comes closer to reality, and reality is much less prudent even than the hyperbolic model.⁷⁰ Surveys also indicate that the presence of illiquid savings plans would increase retirement savings

⁶⁴ Smith, *Wealth of Nations*, Bk. II, ch. iii. ⁶⁵ Loewenstein, 'Rise and Fall'.

⁶⁶ Becker and Mulligan, 'Endogenous Determination of Time Preference', 738–46, 750–3.

⁶⁷ Johnson, *Saving and Spending*, ch. 7. ⁶⁸ Fisher, *Theory of Interest*, 73.

⁶⁹ Miller et al., 'Poverty and Self-Indulgence', quoting Lysgaard, 'Social Stratification', 142; Davis, *Social Class*. More recent evidence, Lawrance, 'Poverty and the Rate of Time Preference', 54–5, and references therein; Goffredson and Hirschi, *General Theory of Crime*.

⁷⁰ Laibson et al., 'Self-Control and Saving', 132–9.

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considerably.⁷¹ For all its complexity, this work is tentative and incomplete. In particular, although it deals with life-cycle decisions, it does not attempt to identify changing consumption patterns over time. Nevertheless, it suggests that a college education, at least, is conducive to higher levels of self-control, though that is facilitated by higher incomes and presumably greater security.

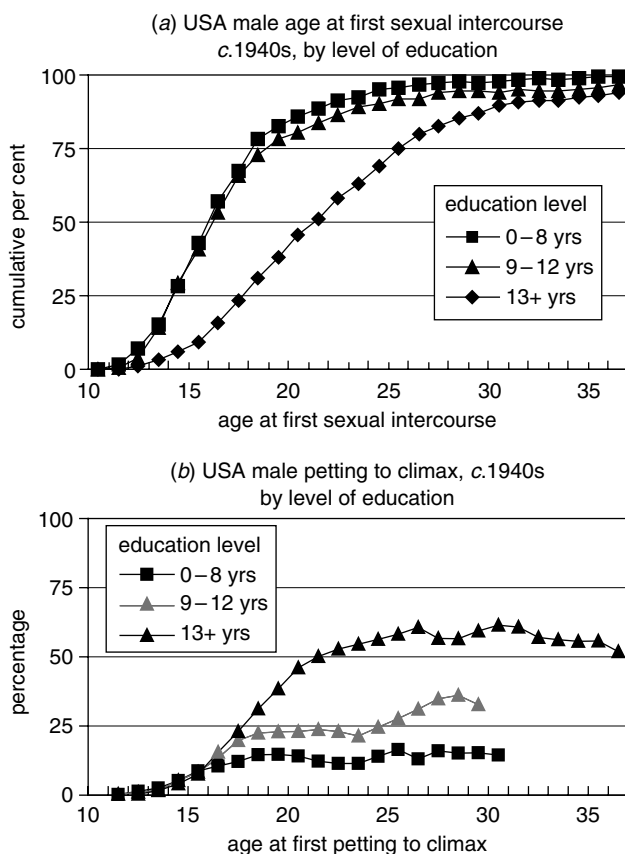


Fig. 3.2. Male sexual initiation, USA c.1940s

(a) Age at first intercourse, white men, United States, 1938–47 by educational level
Source: Kinsey et al., *Sexual Behaviour in the Human Male*, table 137, p. 566, n = 4,148.

(b) Premarital petting to climax, white men, by educational level, United States, 1938–1947
Source: *Ibid.*, table 135, p. 536, n = 2,304. The curves are not truly cumulative: they dip because sample sizes declined with age.

⁷¹ Laibson et al., 'Self-Control and Saving', 171.

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The relation between financial prudence and education is replicated at the micro-level in the case of sexual prudence. Like consumption, only more so, sexuality offers intense, compelling, and immediate pleasures. Several different time scales are involved: the brief and intense cycle of arousal, climax, and deflation, the extended ritual of courtship, the unfolding of a relationship, the making of a family, and its possible unmaking. The costs of gratification and commitment have to be set against opportunities forgone.

Contraception is a challenge for commitment. Kinsey's work on American sexuality in the 1940s provides an example of the difference that cognitive resources, education, and prospects could make.⁷² Figure 3.2 plots the age of first sexual intercourse against final level of education. Figure 3.2(a) indicates that educational prudence and sexual prudence were strongly associated. Men who aspired to and went on to college kept their sexual appetites under tight control. At age 21, they were five years behind their grade-school contemporaries (as a group), and half the college students were still virgins. Figure 3.2(b) indicates that college graduates developed the commitment technology of 'petting to climax', in order to avoid penetration and pregnancy.⁷³

Time inconsistency suggests why saving and sexuality might each be a problem. Consistency is costly. For both saving and sex, education and income help to cope with the challenge of choice. What is the nature of that challenge?

Pacing reward under affluence

For Ainslie, the ultimate reward of commitment is the optimal flow of psychic satisfactions.⁷⁴ Time-inconsistent preferences become particularly troublesome under affluence: subsistence no longer has priority, and most rewards are psychic ones. Novelty, by definition, depreciates very rapidly. Physiological drives are easily swamped by an excess of reward. They are saturated by habituation. Disco music, for example, can cause permanent hearing loss.⁷⁵ Eating stimulates, then deflates appetite. The Wundt curve (Figure 3.3), dating back to the nineteenth century, describes a stylized empirical relation between stimulation and satisfaction.

⁷² Kinsey, *Human Male*. Kinsey's sampling was non-random, but did present reliably the two extremes of white American educational endowment.

⁷³ See e.g. Greene, *Sex and the College Girl*, ch. 5.

⁷⁴ Ainslie, *Picoeconomics*, ch. 9.

⁷⁵ Curry, 'Guarding against Hearing Loss'.

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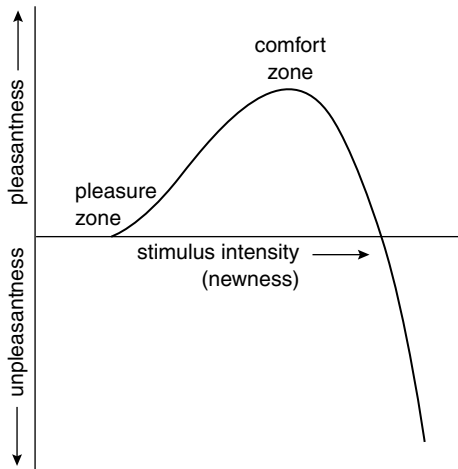


Fig. 3.3. The Wundt curve

Source: Scitovsky, *Joyless Economy*, 35.

On the Wundt curve, less is more. At low levels of stimulation returns are increasing, whereas high levels of stimulation deliver decreasing returns. Take the example of temperature, perhaps of water in a bath. At the bottom of the curve, when stimulation (temperature) is low, every increment produces increasing pleasure, i.e. 'productivity' in terms of satisfaction is increasing. Scitovsky calls this the 'pleasure zone'. After the inflection point is passed, diminishing returns (habituation) set in.⁷⁶ It is possible to maintain the rate of growth of satisfaction, but only by raising stimulation (temperature) at an accelerating rate, and even that has its limits. Satisfaction eventually levels off at a physiological ceiling of habituation that Scitovsky calls the 'comfort zone', where more stimulation produces no further satisfaction. 'Up to a point, more is more; beyond that point, more is less.'⁷⁷ There is nowhere to go but downwards. But there is another option: to scale back stimulation deliberately, and maintain it permanently at the lower level of increasing returns. At that level, every additional increment of stimulation provides *increasing* satisfaction. In terms of time preference, raising consumption in the comfort zone implies a rising discount rate; while slowing it back into the 'pleasure zone' implies a reduction of the discount rate.

Ainslie has a similar argument. Under affluence, the basic drives are easy to swamp cheaply with short-term rewards. Food and alcohol both get

⁷⁶ Scitovsky, *Joyless Economy*, ch. 4.

⁷⁷ Elster, *Ulysses Unbound*, 263.

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cheaper. In conditions of plenty, the problem is not to maximize the flow of rewards, but to keep them under control, not to maximize consumption, but to pace it.⁷⁸ Scarcity itself becomes scarce. As wealth rises, social conventions like table manners, family meals, or courting rituals have evolved (as commitment devices) to slow the pace of rewards down to more optimal levels.

Ainslie states provocatively that 'the main value of other people is to pace one's own self-reward'.⁷⁹ In the nineteenth century, young middle-class people of the opposite sexes could only meet in the presence of a chaperone, thus keeping sensuality buttoned up and scarce. The German distinction between the formal 'Sie' and the familiar 'du' acts to pace social interaction. Scitovsky wrote that novelty is the most stimulating and the most pleasant when it provides surprise, conflict, incongruity, 'cognitive dissonance', deviation, or divergence between expectation and experience. Quite apart from their function as 'enforcers' in self-control agreements, 'other people' help to pace social interaction, and also provide a source of surprise and novelty, which protects from habituation and keeps up arousal levels. That is also a function of literature and art, to amplify that variety, and generate unpredictability. In that sense, a good life might also be regarded as a creative 'work of art'. 'People use reality mainly for aesthetic purposes, that is, for entertainment, in the broad sense of the word,' writes Ainslie.⁸⁰ Irving Fisher, the great American economist, said that 'human beings are ever striving to control the stream of their psychic life by appropriating and utilizing the materials and forces of nature.'⁸¹ Artists achieve more by accepting the constraints of medium and style.⁸²

In the face of plenty, the better-off increase their satisfaction by slowing down. Costly goods, by virtue of their scarcity, perform the function of pacing consumption in conditions of abundance. Very expensive wines cannot be savoured frequently, expensive cars cannot be kept new all the time. Status is satisfying because it is scarce: only few can be at the top. As Ainslie points out, the web of social relations, the conventions of social interaction, the obligations of reciprocity and kinship, the structures of social hierarchy, place an obstacle between people and their desires, and so act to keep an edge on those desires.

From this perspective, well-being is the consequence of a succession of intertemporal compromises. The task is not always to defer gratification,

⁷⁸ Empirical research on self-rationing, see Wertenbroch, 'Self-Rationing', 500–11.

⁷⁹ Ainslie, *Picoeconomics*, 296. ⁸⁰ *Ibid.* 304. ⁸¹ Fisher, *Theory of Interest*, 3–4.

⁸² On self-constraint in art, Elster, *Ulysses Unbound*, ch. 3.

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but to devise a cycle in which self-control in the present is rewarded with the payoffs from self-denial in the past, combined with controlled concessions to current cravings. Unlike 'exponential discounting', it cannot be assigned to a computer. The *quality* of payoffs and their probabilities are imperfectly known. There is room for error, excessive restraint, undercommitment, overcommitment, or excessive indulgence, none of which can be judged with finality except in retrospect, and not reliably even then. The European bourgeois conception of the good life, a complex combination of restraint and gratification, of commitment and hedonism, might be seen as another bourgeois virtue.⁸³ The calendar of workdays alternating with rest days and festivals is another example of an evolved (and evolving) social equilibrium between gratification and prudence. It has changed substantially over time, and has been mostly swept away by the salience of consumption, so that every day can now be a working day—but in terms of consumption, every day is now a feast as well.

⁸³ This was Scitovsky's view. Needless to say, it excluded most of the population, and affected men and women differently.

4

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Affluence affects prudence

If the affluent are likely to be more prudent, it does not follow that prudence increases with affluence. Prudence can decline with affluence, if (a) growing wealth diminishes the *incentive* for prudence or (b) growing wealth diminishes the *capacity* for prudence.

If people anticipate becoming wealthier anyway through the process of economic growth, that reduces their incentive to make a sacrifice now, when they are poorer, for the sake of a future when they are going to be rich (diminishing intertemporal marginal rate of substitution). Furthermore, if a dollar returns more satisfaction to the poor than to the wealthy, then in a growing economy an additional dollar of consumption now is more satisfying than an additional dollar in the future (diminishing marginal utility of consumption). The elasticity of the marginal utility of consumption measures the percentage rate at which the marginal utility falls for every percentage increase in consumption. It is normally assumed that this figure is positive, but that it falls as consumption increases. There is empirical support for diminishing marginal utility of consumption. In affluent societies, for every increment of economic output, the marginal increment of utility is progressively smaller. Current estimates place this elasticity in a range of 0.8 to 1.5 for the UK.¹ Other methods indicate a somewhat wider range over several different countries (c.0.4 to 2.8).² Declining marginal utility of consumption is also suggested by our own plots and tables of welfare indicators against income per head.³ Under affluence (i.e. near the top of the Wundt curve), it requires a great deal of additional income to deliver even a small increase of welfare.⁴

¹ Pearce and Ulph, 'Social Discount Rate', 275–82.

² Price, *Time, Discounting and Value*, 231–3. ³ Ch. 2 above, Fig. 2.2, Table 2.1.

⁴ See also Helliwell, as cited Ch. 2 above, n. 85; Pearce and Ulph, 'Social Discount Rate', 281.

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Diminishing marginal utility of consumption may be attractive as an overarching explanation for the decline of prudence under affluence. But it does not quite square with the facts. For the majority in the United States (and for medium- and low-skilled male workers), between the 1970s and the mid-1990s incomes have stagnated, not risen.⁵ Yet it was precisely in this period, since the 1970s, that many 'commitment technologies' began to break down, most visibly in family dissolution and rising crime.⁶ Moreover, those affected most strongly were those who fared the worst, who experienced little or no material increase, namely the blacks and poor whites at the bottom of the social scale. The first argument, that prudence declines due to the anticipation of greater wealth, has some persuasiveness, but cannot stand on its own.

Another reason for the decline of prudence is that under affluence, commitment devices, the conventions and technologies of self-control, are challenged and offset by hedonic technologies, that offer ever-cheaper rewards: 'knowledge of how to speed the availability of reward has outdistanced knowledge about how to delay it. Recent developments in technology have served our short-term interests better than our long-term interests.'⁷

Technologies of commitment take time to develop and diffuse. They have evolved to cope with enduring problems. Calendars are stable, constitutions change slowly, the common law evolves gradually 'from precedent to precedent'. Under affluence, the flow of novelty undermines those who lack the capacity to cope with its compelling attractions. A compelling reward appears, like cigarettes, fast cars, or fast food. If there is a risk of long-term harm, it is invisible initially. The institutions and techniques of self-control, the conventions of pacing, have yet to be developed. Before motor cars, there was no speeding. Traffic rules, traffic signs, traffic lights, and motoring offences emerged later, together with appropriate insurance. Like the railways before them, the diffusion of motor cars generated a race between the hedonic technologies of speed and the prudential technologies of safety.

Temperance campaigns culminated in total prohibition of alcohol for more than a decade in the USA in the 1920s, and its strict regulation in Britain. Cigarettes have gone through a complete cycle from pervasive acceptance to legal proscription. In the post-war years, hard drugs were suppressed, but consumption continued. After two decades of rapid

⁵ Ch. 11, below, Figure 11.4.

⁶ Fukuyama, *Great Disruption*.

⁷ Ainslie, *Picoeconomics*, 296.

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criminalization of drug use, something is bringing crime rates down: most probably a combination of severe punishment and more effective individual coping with the challenge of compelling drugs, either by avoidance, or by avoiding capture.⁸

The dynamics of self-control are also usefully explored at the micro-level by the example of sex, at the macro-level by the example of saving.

Sexuality

The timeline of sexual initiation in Britain provides a comparison of prudential time lags with the United States. Britain, the less affluent society, demonstrated more prudence on this dimension, a prudence that itself had been formed during the demographic transition in Britain to low birth rates.⁹

University graduates were rare in Britain, but English 'sixth-formers' (comparable to American high-school seniors) were more restrained even than American college students of a generation before. At age 20 in the 1960s, their sexual initiation lagged three years behind American college students of the 1940s. Partly this is due to the inclusion of women in the British group, but the male-female difference only accounts for a little more than a year at these ages, in both Britain and the United States. These

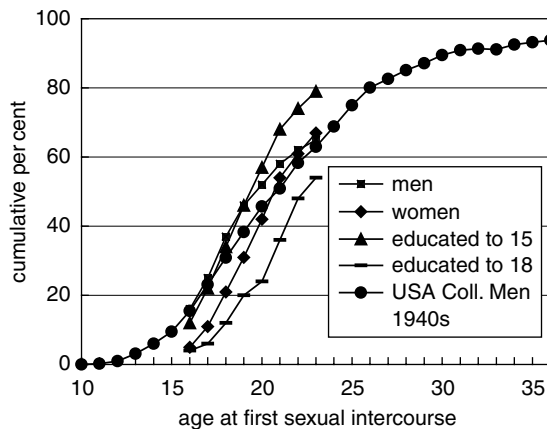


Fig. 4.1. Age at first intercourse, England 1969, by gender and educational level
 Source: Gorer, *Sex & Marriage in England*, table 20, pp. 274–5. n = 1987 (total interviewed). American data from Fig. 3.3, above.

⁸ Rosenfeld, 'Unsolved Crime Decline'.

⁹ Szreter, *Fertility, Class, and Gender*, ch. 8.

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statistics reinforce other impressions of much more restraint in courting practices in Britain compared with the United States.¹⁰

The Kinsey reports from the 1940s indicated that in the USA, as affluence increased over time, sexual activity began earlier with each successive cohort. Fourteen per cent of women born before 1900 had premarital intercourse by the age of 25, compared with 39 per cent of those born a decade-plus later.¹¹ For men, an intergenerational reduction in the age of first intercourse registered quite strongly for primary-school-only males, but the age remained almost constant for college graduates.¹² In a mainly middle-class and married American sample, of those aged below 35 in 1970, 74 per cent had had some sexual experience before marriage, of those aged between 35 and 64, 56 per cent, and of those over 64, only 44 per cent.¹³

More recent surveys of sexual behaviour confirm that age at first sexual intercourse was inversely (and strongly) related to levels of education. This pattern has persisted, though the differences have narrowed.¹⁴ Sexual restraint in Britain has continued to erode, and converged down to American levels. In the past four decades, median age at first heterosexual intercourse fell from 21 to 17 for women, and from 20 to 17 for men, and a sizeable minority were now sexually active before the age of 16.¹⁵ The typical American has the first experience of sexual intercourse at 16–17, and this threshold has fallen with each cohort.¹⁶ Sexual initiative and activity rose from older to the younger cohorts: age at first intercourse, premarital sex, and number of sexual partners.¹⁷ This only gives a statistical gloss to the impression from other sources about the spread of sexual permissiveness since the 1940s, as the open hedonism of the 1960s undermined the prudent college-student pattern of sexual liberalism described by Kinsey.¹⁸ Early sexual intercourse also predicted a higher risk of divorce.¹⁹

In Britain, the most drastic decline occurred during the 1950s, when age at first intercourse declined by two years, almost two decades before the contraceptive pill became generally available to unmarried women. Early intercourse was still associated with lower social class and education. In the United States as well, the decline in the age of first sexual intercourse

¹⁰ Gillis, *For Better*; Humphries, *Secret World*; Schofield, *Sexual Behaviour*, 248.

¹¹ Kinsey, *Female*, table 83, p. 339. ¹² Kinsey, *Male*, 396–417.

¹³ Klassen, *Sex and Morality*, 141.

¹⁴ Wellings et al., *Sexual Behaviour in Britain*, ch. 2; Laumann et al., *Social Organization of Sexuality*, section 9.1.

¹⁵ Wellings et al., *Sexual Behaviour in Britain*, 106, 73.

¹⁶ Rheinisch, *Kinsey Institute New Report*, 6; Laumann et al., *Social Organization*, 326; Smith, 'American Sexual Behavior', table 1.

¹⁷ Wellings et al., *Sexual Behavior*, tables 2.4, 3.1, fig. 3.3; Laumann et al., *Social Organization*, sections 5.2–5.4, 9.1.

¹⁸ D'Emilio and Freedman, *Intimate Matters*, 301–9.

¹⁹ Cameron, 'Economic Model', 313.

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over the last forty years has been slow, with little evidence of a discrete 'sexual revolution'.²⁰

Americans remain more affluent than the British, and (consistent with our model), more impulsive as well, at least as far as sexual behaviour is concerned. A good deal of evidence indicates that women and men do not manage contraception very effectively. By far the most popular form of contraception in the United States is sterilization, used by 51 per cent of married persons, and 13 per cent of singletons. This is a rather drastic 'commitment technology', which ditches discretion, permits no second thoughts, and locks in the future.²¹ In the UK, surgical contraception among married and cohabiting couples is less than half that rate, and it is even lower in continental Europe.²² No one has sexual intercourse intending an abortion, so the abortion rate is also a measure of self-control. In the late 1980s, the rate of abortions to all pregnancies in the United States was 0.286, while in England and Wales it was 0.186. The rate of abortion per 1,000 women was 27.3 and 14.2 in the two countries respectively.²³ For teenage pregnancy, abortion, and birth rates, the American level was roughly twice as high.²⁴ Another indication is the course of the AIDS epidemic. Controlling for population size, the United States has had five adult cases of AIDS for every case in the United Kingdom.²⁵

Saving

Sexuality challenges prudence at the level of micro-decisions. At the macro-level, the decline of prudence under affluence appears to be demonstrated in household savings. In the United States and Britain, and especially during the 1990s, household discretionary savings have declined down to very low levels, and this decline has given rise to some alarm about overconsumption and undersaving.²⁶ But the national accounts measures of household savings are somewhat misleading. What they measure is simply the difference between income after taxes and consumption. This statistic in itself does not adequately measure whether households (in the aggregate) are putting aside enough for unemployment and ill-health, and for

²⁰ Wellings et al., *Sexual Behaviour*, 73, 80–1; Laumann, *Social Organization*, 323–4.

²¹ Morgan, 'Modern American Fertility', table 5, p. 51.

²² Frith, 'Britons pick Sterilisation'.

²³ Women aged 15–44. United States, *Statistical Abstract of the United States*; UK, *Population Trends*.

²⁴ Morgan, 'Modern American Fertility', table 6, p. 53, fig. 9, p. 31.

²⁵ Joint United Nations, *Aids Epidemic 2002*, table, p. 198.

²⁶ Hatzopoulos et al., *Overconsumption*; Poterba, *Public Policies*.

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the cost of retirement and the desire to bequeath. For these purposes, there are other assets which ought to be counted, namely education and skills (human capital), financial wealth, durables including housing, and non-discretionary benefits like social security pension entitlements. From the point of view of the economy as a whole, household saving is not a measure of the ability to sustain the social rate of consumption or the capital base.²⁷

Only a minority share of saving is undertaken by individuals: most is done by business and government. But since business is owned by individuals, and governments act as agents for individuals, the line between household and social savings is more significant for understanding the incentives to save, than for its effect on social and economic performance. Household savings indicate what proportion of income is withdrawn from consumption through the discretionary decision of households. Gross national savings indicate how much saving is undertaken by society overall. The relation between the two suggests the extent to which households rely on impersonal commitment technologies to achieve savings, and what levels of saving society achieves. It is not a measure of the efficiency in which savings are converted into investment, which is a separate issue.

Figure 4.2 compares household and social savings, in four groups of countries: Japan (representing the industrialized countries in East Asia), a sample of European countries (Belgium, France, Netherlands, West Germany), 'Anglo', i.e. the main English-speaking countries (Australia, Canada, the United Kingdom, and the United States), and Scandinavia (Denmark, Norway, Sweden). Comparative data have been collected by the World Bank Savings project.²⁸

Looking at household savings rates first, what counts here is not trends but levels. Each cluster follows a distinctive pattern. Highest levels of discretionary household savings are in Japan. In the absence of effective social commitment technologies (in the form of employer and state pensions, as well as mortgage lending), households have had to rely on their own commitment resources, and have saved at very high levels. Korea follows a similar pattern, with a lag of several years. Strong family and social bonds reinforce the capacity for household commitment. National savings rates are also very high, suggesting that household savings capacity is a complement rather than a substitute for the capacity of firms (and government) to save.

²⁷ Gale and Sabelhaus, 'Household Saving Rate'.

²⁸ Loayza et al., 'World Saving Data Base'.

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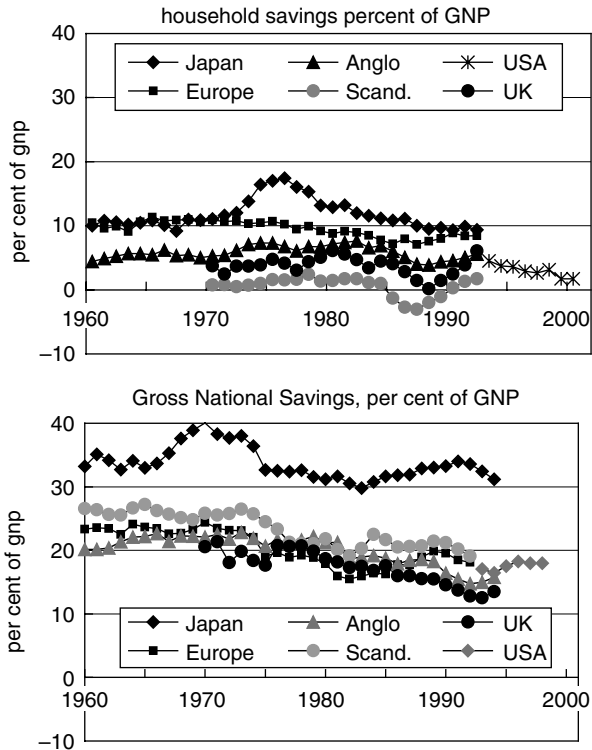


Fig. 4.2. Household and national savings, c.1960–1992

Note: Anglo: English-speaking countries—Australia, Canada, United States, UK.

Sources: World Bank Savings Project: www.worldbank.org/research/projects/savings/policies.htm; www.worldbank.org/research/projects/savings/data.htm

European countries have sustained household savings at a high level as well. Since Europeans also have large illiquid state pension entitlements, that suggests a capacity to exercise prudence over personal resources. The high level of household savings suggests either difficulties of borrowing, a prudent desire to diversify savings risk away from dependence on government, or perhaps a greater cultural capacity for prudence. In the English-speaking countries, household savings levels are lower. These countries have several distinctive attributes: mandatory state and employer pension systems, high levels of house ownership, liberal credit markets (since the 1980s), and considerable inequality of wealth. Discretionary saving in the USA is largely done by the rich.²⁹ In these circumstances, most households

²⁹ Bosworth et al., 'The Decline in Saving'; Gokhale et al., 'Understanding the Postwar Decline'.

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consume almost all of their incomes, and have relied for prudence largely on social arrangements. In the United States, where household savings rates have declined almost to nothing, this is partly compensated for by the rise of the stock market and of house values.³⁰ In the Scandinavian countries, household savings levels are tiny, and sometimes negative, while social savings rates are the highest in the West. This reflects another prudence equilibrium: in these more equal societies, there are fewer ultra-rich capable of heavy saving, as there are in the USA, and high tax levels encourage consumption. Households apparently felt sufficiently trusting and secure to have delegated prudential commitment almost entirely to business and government, and have not relied on any savings of their own.

Shifting the gaze to aggregate savings, Japan stands highest in a class of its own. Among the western clusters, Scandinavia consistently maintains the highest savings rates, suggesting a strong prudential capacity for society as a whole, which offsets the virtual absence of household savings. Europe and the English-speaking world are lower, but comparable to each other in terms of aggregate savings. But the long-term pattern is that the overall capacity for saving has declined quite substantially since the 1960s, suggesting (as in the micro-case of individual sexual behaviour), a declining capacity for prudence as affluence has increased.

Adequate levels of provision at most income levels are achieved by means of entitlements that are largely illiquid, and therefore protected from the myopic saver. The construction of these savings technologies, most of them underpinned by large tax incentives, or by outright compulsion, is a feature of advanced consumer societies, and has gone to the greatest extreme in the Scandinavian countries. How robust it is to the ageing of society, to market volatility, and to political contention, is an important question. The very high household savings rates in the newly industrialized East Asian societies suggest that where social pooling commitment technologies are underdeveloped, people have to rely largely on their own discretionary savings, i.e. on small-scale commitment devices at the family and even personal levels.

The low levels of household savings in the English-speaking countries indicate that these affluent societies have reduced their reliance on discretionary savings, and instead have relied increasingly on society, by means of commitment technologies, to do their saving for them. Whether household savings are adequate (given the existence of social assets) is difficult to resolve. Simulations indicate that on more or less plausible assumptions,

³⁰ Gale and Sabelhaus, 'Household Saving Rate'.

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household saving at the median saver level is adequate to maintain current patterns of intertemporal consumption.³¹ But the probability of bad luck, the prospect of low household saving rates, declining social savings rates, and uncertainties about the robustness of business and social institutions, justify some concern both about the adequacy of intertemporal provision, and about its social distribution. These trends are not fully understood, nor is it very meaningful to aggregate savings rates over very unequal societies. Nevertheless, at this crude level, trends in the household saving rate may be related to the issues of prudence and commitment technologies. Cohort studies suggest that the emergence of credible state social security has acted to reduce personal savings rates in the United States, and presumably in Britain as well.³² In continental Europe, social security levels are higher, and presumably just as secure, and yet personal saving rates are higher, suggesting stronger prudential motives, and a prudential diversification of risk. In East Asia credible social commitment is undeveloped, and hence the large commitment effort within the household.

Other reasons given for the precipitate decline in household savings in the English-speaking countries are the rise in personal wealth, mainly housing and financial assets, which increased during the 1980s and 1990s almost inversely to the decline of household savings.³³ This is not entirely an adequate explanation. Financial assets are highly concentrated at the top end of society, and about half the population have none at all. About one-third of households have no housing equity either. In spite of higher levels of income per head, compared e.g. to the newly developing countries, middle- and low-income earners in the United States and Britain have very low household savings rates. This is not totally imprudent: they rely implicitly on the robustness of social safety nets.

Commitment to saving depends on the technologies available. For example, whether people enrol in voluntary pension schemes depends a great deal on whether they are only permitted to opt out (which leads to high participation) or required to opt in (which leads to low participation).³⁴

Before the 1980s, savers relied on the commitment technologies of illiquid savings, whether in pension entitlements, insurance, or house purchase. Deregulation of personal credit in the United States (and Britain) was accompanied by a sustained decline in saving rates. Liberalization of lending during the 1980s has undermined these technologies, by making

³¹ Sabelhaus and Pence, 'Household Saving'; Engen et al., 'Adequacy of Household Saving'.

³² Gokhale et al., 'Understanding the Postwar Decline'.

³³ Verma and Lichtenstein, 'Declining Personal Saving Rate'.

³⁴ Thaler and Sunstein, 'Libertarian Paternalism', 176–7.

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it easier to borrow against illiquid savings, e.g. by withdrawing housing equity. Some predatory lenders have been targeting the collateral.³⁵ One of the consequences was a ninefold increase in personal bankruptcy rates since the 1970s, a social disaster comparable in scope and magnitude to the rise in obesity (Ch. 7 below) and in prison populations.³⁶

Choice again: rational, myopic, and regulated

In economics, it is implicitly assumed that the unfettered choice of individuals adds up to maximize the welfare of society. This 'invisible hand' assumption is the core doctrine of the discipline, but it had long remained just an article of faith. Over the last seventy years, the quest to pin down this holy grail was intensified.

One basic difficulty was how to add up the subjective preferences of heterogeneous different consumers. In the 1930s, it was agreed that they could not be aggregated, and that interpersonal comparisons could not be made. The concept of utility was sidelined out of consumer behaviour and welfare economics.³⁷ Instead of a mentalistic view of utility, actual dollar choices of consumers ('revealed preferences') were used to construct demand curves. In the early 1950s, Arrow's 'impossibility theorem' suggested, on the face of it, that the 'invisible hand' could not transform individual choice into social optimality. Later in the 1950s Arrow and Debreu came closest to formalizing the invisible hand in their two theorems of welfare economics. These showed that any general equilibrium (i.e. an idealized, encompassing market) could produce a distribution of income that was Pareto Optimal (i.e. left everyone the same or better off), given some initial distribution of endowments. Modigliani's 'life-cycle consumption' hypothesis assumed that consumers rationally allocated their expected resources so as to smooth consumption over the life cycle. In the 1970s the 'rational expectations' doctrine argued that individual agents would anticipate and offset any attempt to regulate the economy. After more than half a century of theoretical activity, the invisible hand and the optimality of markets is underpinned in economics by formidably technical, theoretical constructions. But it all depends on severe abstraction. In reality the invisible hand remains what it was to begin with, an article of faith. At the core of it is belief in the rational, consistent consumer. There

³⁵ Laibson et al., 'Self-Control and Saving for Retirement'; Warren and Tyagi, *Two-Income Trap*.

³⁶ Below, Ch. 12, nn. 106–7.

³⁷ Meeks, 'Utility in Economics'.

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remains some doubt even as to whether the abstractions of general equilibrium and its optimality theorems are 'computable', i.e. whether they are mathematically tractable.³⁸ Simon's concept of 'bounded rationality' captures the same difficulty more pragmatically: even if the options were all knowable, ranking them is beyond human cognitive capacity.

The market order was only efficient and just if buyers and sellers reliably and consistently knew what they wanted. In the words of Friedman, already quoted, '*provided the transaction is bi-laterally voluntary and informed*'. 'Informed' in this context means that the consumer knows her own mind, knows her own good, and knows the options available to her. 'Voluntary' in this context means that she is aware of all her motives.³⁹

The ubiquity of inconsistent preferences has placed these assumptions in doubt. Experiments and attitude surveys indicate that the immediate present is disproportionately compelling, and that the mere passage of time can cause preferences to be altered or even reversed. Rationality requires that consumers should be consistent, so these observations undermine the assumption that choice is reliable. That choice could be inconsistent was shown early on in the experimental paradoxes of Allais and Ellsberg. Since then, many empirical findings have found against the assumptions of rational consumer theory.⁴⁰ Kahneman and Tversky have shown that choice is biased in other important ways: losses are experienced more intensely than gains of the same magnitude, and the asymmetry is too large to be accommodated by the standard economic assumption of diminishing returns.⁴¹ Another bias is 'framing'—choice is affected by the context in which it is presented. Consumers do not reason probabilistically and make consistent errors. Instead, they follow various rules of thumb, 'heuristics', although such heuristics can be efficient, in the sense that they may economize on information.⁴² Rewards are evaluated differently in anticipation, while being experienced, and in retrospect.⁴³ This made it difficult to learn from experience. In behavioural experiments, subjects agreed to cooperate and share much more than rational consumer theory predicts. The range of choices increases the cognitive burden and the stress on individuals, especially when it is difficult to find reasons to differentiate among them.⁴⁴

³⁸ Velupillai, *Computable Economics*; Mirowski, *Machine Dreams*.

³⁹ See O'Donoghue and Rabin, 'Self-Awareness'.

⁴⁰ Hogarth, *Judgement and Choice*; Hogarth and Reeder, *Rational Choice*, esp. papers in pp. 1–100.

⁴¹ Kahneman, 'Psychological Perspective'; Rabin, 'Diminishing Marginal Utility'.

⁴² Gigerenzer, *Simple Heuristics*.

⁴³ Kahneman, 'Objective Happiness'; id., 'Experienced Utility'.

⁴⁴ Schwartz, *Paradox of Choice*.

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Investment in advertising, amounting at times to more than 2 per cent of GDP, indicates that consumers respond to external suggestion, much of which cannot be regarded as pure information.⁴⁵ In marketing, where real money is at stake, there is no single paradigm of consumer choice, and many competing understandings are in contention.⁴⁶ The thrust of empirical work since the 1960s in a variety of approaches is that the rational consumer is a fiction, and that choice is often fallible. The choices people make do not always accord with what, from a different temporal viewpoint, they would judge as being good for themselves.

To repeat, a great deal is at stake here: at a technical level, the assumption of consistency in choice, which is a pillar of economic analysis. At the level of ideology, the justification of market outcomes as being both efficient and equitable. At the political level, the bias in favour of deregulation, privatization, and low taxes. One response of consumer theorists was simply to brush off these criticisms.⁴⁷ Several writers have constructed models which attempt to resolve the problem mathematically.⁴⁸ Theories that postulate temporary 'hot' emotional influences which deflect choice off course, leave rationality in place as a model of 'cool' decision making, which is presumably appropriate to social choice.⁴⁹

Friedman's Chicago first anticipated, then subsequently acknowledged the challenge, with a clever alternative, which is designed to save the notion of consumer rationality and consistency. Two such models attempt to capture the key attribute of hyperbolic discounting, namely the variable rate of time preference, high to begin with, and low at long delays. The purpose is to reconcile addictive behaviour with time consistency.⁵⁰ Both approaches deal with the problem by making time preference a function of prior accumulation or endowment. The first is the theory of rational addiction.⁵¹ The crucial assumption is again a temporal one, but one that looks backwards rather than forwards. Consumer choice is influenced not only by relative prices, but also by the investment in past consumption, which has built up a stock of appetites: a larger stock of past consumption raises the marginal utility of current consumption. Accumulated 'consumption

⁴⁵ Ch. 6 below. O'Shaughnessy, *Why People Buy*; id., *Explaining Buyer Behavior*.

⁴⁶ O'Shaughnessy, *Explaining Buyer Behavior*. ⁴⁷ Lord, *Household Dynamics*, 34, n. 4.

⁴⁸ Orphanides and Zervos, 'Rational Addiction'; id., 'Myopia and Addictive Behaviour'.

⁴⁹ Mischel et al., 'Sustaining Delay'; Baumeister and Vohs, 'Willpower, Choice'. This is also implicit in quasi-hyperbolic discount curves, in which all but the first period are modelled exponentially.

⁵⁰ 'The presence or lack of "preference reversals" is the important distinction in any formulation.' (Mulligan, 'Logical Economist'.)

⁵¹ Stigler and Becker, *De Gustibus*'; Becker and Murphy, 'Rational Addiction'; Becker et al., 'Rational Addiction'.

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capital', or 'habit', affects immediate responses, so that withdrawal becomes costly in the amount already consumed, rather in the manner observed towards the 'comfort zone' of the Wundt curve. Discount rates are high, so the benefits of withdrawal are beyond the horizon, and the pains of withdrawal are avoided by increasing consumption today. The rationality of such addicts is said to be confirmed by the fact that they remain price sensitive.⁵²

The second response is a theory of 'endogenous time preference'.⁵³ It acknowledges that commitment, or prudence, is costly. If delayed rewards can be made sufficiently vivid, it is worth investing in them; and it is worth investing in raising awareness of future rewards. The commitment devices and technologies are similar to those invoked by Ainslie, namely control of attention, and education. 'The rich' are more likely to invest in commitment, because they have the means to do so, because that investment allows them to perceive the future more clearly, and because the rich have more to lose. They are motivated and able to invest in order to reduce their discount rates.

By accepting the 'rationality' of high discount rates, 'rational addiction' theory defines away much of the problem that needs to be explained. Otherwise, the test of price responsiveness is hardly a refutation of cognitive-bias theories of behaviour. Such theories do not assume that consumers, even addicted ones, would ignore prices altogether. Crucial experiments between rival theories are rare, but in the area of self-control, one has recently come up. In Canada, tobacco taxes were increased in some provinces but not others. A survey has shown that where taxes rose, the subjective well-being of smokers has risen as well. Had they been 'rational addicts', the increase of price should have reduced their perceived well-being. That their satisfaction actually increased suggests that (as smokers often aver) smoking was a choice they regretted, and that they welcomed higher taxes as an aid to self-control.⁵⁴ Another set of data, on the anticipation of tobacco tax increases by smokers in American states, showed that preferences with respect to smoking were time inconsistent, with individuals both not recognizing the true difficulty of quitting and searching for self-control devices to help them quit.⁵⁵

⁵² 'Sarcastically, the test amounts to asking whether smoking falls when prices are increased the next year' (Gruber and Köszegi, 'Is Addiction "Rational"?', 1265).

⁵³ Becker and Mulligan, 'Endogenous Time Preference'.

⁵⁴ Gruber and Mullainathan, 'Do Cigarette Taxes Make Smokers Happier?'

⁵⁵ Gruber and Köszegi, 'Is Addiction "Rational"?'

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For all the sophistication of discount modelling, it is not psychologically grounded.⁵⁶ It takes the mind as a black box, and does not presume to say how discounting really works. In fact these models are also experimentally insecure, not always finding decisively in favour of one model or the other.⁵⁷ If Ainslie's rich psychological speculations are perhaps beyond falsification, the premisses of Rational Choice are equally speculative. We are nevertheless left with a clear pattern: a multitude of observations and intuitions give rise to time inconsistency, and an excessive preference for the present, which can be overcome by commitment.

If people do a good job in making decisions, then there is no reason for any social intervention beyond perhaps updating information. If choice is known to be fallible, and shown to be so, then there is a case for social cooperation in making decisions, not only in acquiring information and understanding it, but (in what Smith realized was a separate problem), in mobilizing the will to act on that choice. That nannies are sometimes good for children is rarely in question. The 'nanny state', however, has a bad press. But if consumers are fallible, then grown-ups can also do with some guidance occasionally. A few economists are coming round to this view, and accepting that well-designed interventions can raise the level of well-being.⁵⁸ The drinker's judgement of his fitness to drive deteriorates with each additional glass. Paternalism protects both the driver and the public. Likewise, the pervasive use of goods in kind for redistribution. In Britain, 'housing benefit' is a common welfare entitlement, which is earmarked exclusively for housing. In the United States the food stamp entitlement is likewise not fungible. This protects the indigent from themselves. In both countries free education and health care provide commitment crutches for the middle classes as well.

Outside economics, that is plain common sense. But it presents a challenge to those who believe that choice is sacred: those with freedom have chosen to be unfree. For pure liberals to argue that people are misguided in choosing to be regulated, is self-contradictory: it rejects the choices that the people have exercised freely. In fact, scaling up from individual to social choice is fraught with difficulty.⁵⁹ In the United States, restriction of

⁵⁶ Rubinstein, 'Economics and Psychology'; Price, *Time, Discounting and Value*; Loewenstein et al., *Time and Decision*, contains several suggestive explorations; Ainslie's brilliant speculations (in *Picoeconomics*) are highly suggestive, but do not require the mathematical model.

⁵⁷ Rubinstein, 'Economics and Psychology'; Fernandez Villaverde and Mukherji, 'Can We Really Observe?'; Cairns and van der Pol, 'Saving Future Lives'; but see id., 'Valuing Future Benefits'.

⁵⁸ Burrows, 'Patronising Paternalism'; Thaler and Sunstein, 'Libertarian Paternalism'; O'Donoghue and Rabin, 'Studying Optimal Paternalism'.

⁵⁹ Elster, *Ulysses Unbound*, ch. 2.

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choice is part of the conservative repertoire: balanced budget constitutional mandates, designed to protect voters against themselves, were implemented in most American states, and only failed in the United States Senate by a single vote in 1995. Such strong pre-commitment, with its admission of time inconsistency, undermines Friedman's insistence on freedom of choice, which depends on time-consistency for its identification of choice with welfare.

When Friedman was defending freedom of choice, he suggested that the alternative was tyranny. But that was disingenuous. The fact remains that in liberal societies, and under democratic government, people on the whole choose to delegate or surrender a great deal of discretion to public and private institutions. That is also demonstrated in saving behaviour.

As the USA and Britain have grown wealthier and more democratic over the last century, intervention and regulation have increased. Much of it accepts implicitly that what people might want to choose is bad for them, and that they should not be allowed to have it. There are three levels of paternalism: exhortation, inducement (by means of taxation or pricing), and compulsion. The freedom of private individuals to buy and consume hard drugs is restricted by means of a repressive police and prison apparatus that keeps about a million people in prison in the United States and sustains a large global industry that operates entirely outside the law. Apart from a few libertarians, this repression is supported even more strongly on the political right than on the left. That serves as evidence that democratic, liberal states have only limited trust in people's choices, and are willing to intervene in order to change them. A theory that aligns unfettered choice with maximizing welfare would find such regulation difficult to justify.

If one accepts that cognitive bias makes choice and self-control both difficult and fallible, then the normative issue is not whether intervention is ever justified, but how much, in what form, and when. History can monitor the positive extent of intervention, cooperation, and consensus, that individuals have been willing to accept in order to gain some control over compelling appetites. History can evaluate how difficult the problem of choice really is, and what forms it takes. Paternalism is often the voter's revealed preference, and the historian, at least, should treat it with respect.

Conclusion

Choice is inconsistent, and finding a good equilibrium is a dilemma. To escape the compelling immediacy of the present, it is necessary to lock in

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the future, by means of 'commitment technologies'. These are costly. As an array of internal disciplines, they take time to build up by means of education and experience. As a set of external disciplines, they are enforced by means of social norms, conventions, reputation and shame, or by legally binding contracts. Even if we valued the future equally with the present (as some writers recommend), locking in the future incurs a cost (the 'commitment technology') that consuming in the present does not. That in itself would provide a reason for discounting.

At any point in time, self-control is positively associated with social position and wealth. The better-off have more cognitive, material, and social resources, and are better equipped to attempt a rational allocation of satisfaction over time. But taking affluent societies as a whole, there is a tendency for prudence to decline with affluence. One reason is that affluence delivers diminishing returns. Another is that under affluence, the environment changes faster than commitment strategies can keep up with it. Adaptive technologies take time to form. If a problem persists for long enough society will eventually find the means to cope, the better-off first, then the rest of society. This can be likened to an evolutionary process: society gradually adapts into greater fitness with its environment. But when environments change, existing adaptations become obsolete. In a world of constant change, individuals and institutions are likely to be permanently out of kilter with the environment, and it should be no surprise to find novel pathologies emerging repeatedly. Under affluence, novelty tends to produce a bias towards short-term rewards, towards individualism, hedonism, narcissism, and disorientation.

Market competition promotes myopic bias. It promotes hedonism over other forms of satisfaction, since hedonic reward is easier to identify, package, and sell. It promotes individualism, since that reduces the costly and time-consuming need to negotiate and compromise with others, and to contract with the future. Individualism and hedonism combined give rise to narcissism, an obsessive interest in the self. And hedonistic, individualistic and jaded consumers will, in their turn, make more eager consumers for the next twist in immediate gratification. The compelling products of innovation raise the psychic cost of investing in long-term rewards. Innovation also creates an ambience in which the uncertainty and instability of tastes makes it more difficult to invest in consumption and pacing skills that might only deliver in the longer run. Popular culture is not bad: nor is high culture necessarily better. But the proliferation of cheap rewards makes those rewards that need an investment of patience and time that much more difficult and expensive to achieve.