Contemporary Economic Challenges
December 6, 2019

ANSWERS VERSION 1

1. Weitzman (2011) objects to using

$$M(T) = \frac{\alpha T^2}{1 + \alpha T^2};$$

where T is global temperature change, $M(T)$ welfare losses and α a parameter, because:

   (a) it underestimates the costs of tail events: the exponent on temperature change should be at least 3;
   (b) no one knows what the damage function should be for large values of T;
   (c) the value of α is taken from a model by Nordhaus, which he dislikes;
   (d) he thinks that welfare losses should be modeled additively, not multiplicatively;
   (e) none of the above.

   Correct answers: (b)

2. Nordhaus (2011) discusses earthquakes because

   (a) melting icecaps will change the distribution of pressure on the earth's crust, changing the incidence of earthquakes;
   (b) like asteroid strikes and extreme climate change, they have the potential to "destroy human civilizations";
   (c) they provide a clear example of a fat-tailed distribution;
   (d) like climate change, they are extremely unpredictable;
   (e) none of the above.

   Correct answers: (c)

3. Nordhaus (2011) uses the probability distribution $P = k_1 X^{-(1+a)}$ and utility function $U = k_2 C^{1-b}$ to show that:

   (a) Weitzman's dismal theorem requires $b > a + 1$;
   (b) while utility increases in consumption, the probability of climate change decreases as it becomes more extreme;
   (c) results of BCA models depend on choice of k_1 and k_2;
   (d) uncertainty only plays a second order role in climate change BCA;
   (e) none of the above.

   Correct answers: (a)

4. To avoid paternalistic behaviour in a workplace cafeteria, Thaler and Sunstein (2003) recommend:

   (a) "putting the fruit before the desserts";
   (b) "place the dessert in another location altogether";
   (c) "providing a randomized meal and allowing employees to trade amongst themselves";
   (d) "giving staff meal vouchers redeemable at local eateries";
   (e) none of the above.

   Correct answers: (e)

5. Let $\{A, B, C, D, E\}$ be an ordered set of objects displayed to a consumer, so that A is seen before B and so on. If the consumer is known to favour D but be very impatient, which of the following ordered sets is consistent with a libertarian paternalism in the sense of Thaler and Sunstein (2003)?

   (a) $\{D\}$;
   (b) $\{D, D, D, D, D\}$;
   (c) $\{D, A, B, C, E\}$;
   (d) all of the above;
   (e) none of the above.

   Correct answers: (c)

6. Nordhaus (2011) believes that climate change differs from other potential catastrophes such as atomic explosions, strangelets and rogue bugs because

   (a) with climate change, we can learn over time, making midcourse corrections along the way;
   (b) we now understand that existential concerns arising from atomic explosions and strangelets were mistaken, and have good protocols for handling lab-designed organisms;
   (c) the welfare effects will be unevenly distributed;
   (d) "we are on the threshold of developing new technologies that can scrub carbon from the atmosphere at low cost";
   (e) none of the above.

   Correct answers: (a)

7. According to Reinhart and Rogoff (2010), their methodology is

   (a) "rigorously theoretical", grounded in modern development economics;
   (b) "deliberately agnostic", to protect their work from misinterpretation;
   (c) "decidedly empirical", taking advantage of a new dataset;
   (d) "undeniably correct", carried out by senior economists and supported by "one of the world's leading time series econometricians";
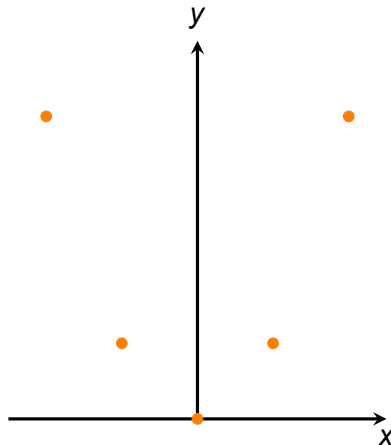   (e) none of the above.

   Correct answers: (c)

8. According to Shiller (2003), the distributed-lag feedback model

    (a) implies short-term serial correlation (i.e. momentum);
    (b) is too obscure for most non-academics to understand;
    (c) leads to 'smart money' offsetting uninformed investors;
    (d) all of the above;
    (e) none of the above.

    Correct answers: (e)

9. What is the slope of the best fit line (in the sense of ordinary least squares) to the points in the figure below?

    (a) NaN (not a number);

    (b) zero;

    (c) infinity;

    (d) unity;

    (e) none of the above.

    Correct answers: (b)

10. According to J. L. Simon (1981), "a fair-minded assessment of the situation" requires

    (a) carefully picking-and-choosing specific measures of environmental conditions and pollutants;
    (b) focus on standard aggregate measures;
    (c) recognising that "we are at a moment of discontinuity", limiting the relevance of the past;
    (d) a "reduction of complex relationships to simple" explanations;
    (e) none of the above.

    Correct answers: (b)

11. According to Friedman (1953, ch.1), when economics deals with "what ought to be":

    (a) it is easier than the economics of "what is";
    (b) the economics of "what is" can be ignored;
    (c) the economics of "what is" cannot be ignored;
    (d) it is harder than the economics of "what is";
    (e) none of the above.

    Correct answers: (c)

12. According to Ehrlich (1981b), which of the following helped to explain the "mysteriously 'self-destructive' " behaviour of the whaling industry?

   (a) whales could not "provide a permanent resource flow if harvested prudently";
   (b) the whaling industry sought to "maximize the net present value of the whale resource";
   (c) the whaling industry sought to "maximize the sustainable annual yield of whales";
   (d) whales could 'provide a permanent resource flow if offered an incentive-compatible contract";
   (e) none of the above.

   Correct answers: (b)

13. According to Reinhart and Rogoff (2010), above a debt/GDP ratio of 90%

   (a) is a "cliff-edge", ensuring low growth for decades to come;
   (b) is "terra incognita", as so few countries have breached that threshold;
   (c) depends on whether a country is "advanced" or "emerging";
   (d) is a "red line" of high inflation;
   (e) none of the above.

   Correct answers: (e)

14. In a Spence (1973) signalling equilibrium

   (a) signalling always makes all agents better off;
   (b) signalling always makes all agents worse off;
   (c) signalling always makes 'high productivity' agents better off, but 'low productivity' agents worse off;
   (d) signalling always makes society better off;
   (e) none of the above.

   Correct answers: (e)

15. According to Malkiel (2003), a 'random walk' is

   (a) an intellectual exploration begun without a clear idea of where it will end;
   (b) an extra-curricular activity engaged in by Wall Street bankers after the markets close;
   (c) a statistical process exhibiting excess volatility robust to various specifications for the discount rate;
   (d) a price series whose changes represent random departures from previous prices;
   (e) none of the above.

   Correct answers: (d)

16. Samuelson (1963) uses the expression

$$A^+ \supset A \equiv B \equiv C \supset C^-$$

where *A* is the set of assumptions, *B* the theory, and *C* the conclusions, to argue that

   (a) realistic conclusions are equivalent to realistic assumptions;
   (b) realistic assumptions are greater than realistic conclusions;
   (c) set theory can provide a logically consistent foundation for mathematical economics;
   (d) assumptions come before conclusions;
   (e) none of the above.

Correct answers: (a)

17. According to Ehrlich (1981a), humanity is

   (a) " 'running out' of nonfuel mineral resources";
   (b) "dispersing nonfuel mineral resources";
   (c) "dispersing the capacity of the environment to absorb nonfuel mineral resources";
   (d) all of the above;
   (e) none of the above.

Correct answers: (b)

18. Only men are included in the earnings analysis in Webber (2014). Based on the results in Walker and Zhu (2013), we might predict that replicating the analysis with a cohort of women would:

   (a) make no difference to the analysis in Webber (2014);
   (b) make no difference to relative returns in the analysis in Webber (2014) as women earn a fixed fraction of what men earn;
   (c) render the analysis in Webber (2014) meaningless;
   (d) preserve the existence of a graduate premium when controlling for selection;
   (e) none of the above.

Correct answers: (d)

19. According to Arrow, the "when the market fails to achieve an optimal state, society will, to some extent …"

   (a) collapse;
   (b) attempt to reach it with nonmarket institutions;
   (c) be "nasty, brutish and short";
   (d) become more unequal;
   (e) none of the above.

Correct answers: (b)

20. A Spence (1973) signalling equilibrium

   (a) is self-confirming, so that employers' beliefs about candidates' productivities are reinforced after hiring them;
   (b) is self-defeating, so that employers' beliefs about candidates' productivities are eroded after hiring them;
   (c) is strongly Pareto efficient, so that no re-allocation of educational resources would increase someone's utility without decreasing anyone else's;
   (d) is weakly Pareto efficient, so that no re-allocation of educational resources would increase everyone's utility;
   (e) none of the above.

   Correct answers: (a)

21. According to Arrow (1963), the medical-care industry is unique in that

   (a) "the consumer cannot test the product before consuming it";
   (b) "departure from the profit motive is strikingly manifested";
   (c) "entry to the profession is restricted by licensing";
   (d) "specialists and some medical equipment constitute significant indivisibilities";
   (e) none of the above.

   Correct answers: (e)

22. The calculations in Herndon et al. (2014) on the Reinhart and Rogoff (2010) data mostly affect

   (a) median growth rates for highly-indebted advanced countries since 1946;
   (b) mean growth rates for highly-indebted advanced countries since 1946;
   (c) median growth rates for highly-indebted emerging countries since 1946;
   (d) mean growth rates for highly-indebted emerging countries since 1946;
   (e) none of the above.

   Correct answers: (b)

23. According to Malkiel (2003), the market crash of 1987, in which prices dropped by one third,

   (a) is an irrefutable case of market inefficiency;
   (b) is an anomaly that merely proves the markets are not always entirely efficient;
   (c) is consistent with efficiency given the actual change in bond yields and an increase in equity risk premium demanded;
   (d) led to the adoption of 'circuit breakers' to prevent such rapid crashes;
   (e) none of the above.

   Correct answers: (c)

24. In their online exchange with Hamilton, Pollin and Ash note that the post-WWII years in which the US net interest payments were the highest share of total government expenditure

    (a) have occurred since the 2007–2008 financial crisis;
    (b) have yet to occur;
    (c) include the years under Presidents Reagan and Bush Sr;
    (d) are highly counter-cyclical;
    (e) none of the above.

    Correct answers: (c)

25. According to Pindyck (2011), the question of whether the probability distribution governing climate outcomes is fat- or thin-tailed is

    (a) central to understanding expected costs and benefits of climate change;
    (b) misleading, a technical sideshow when we should be focusing on welfare implications of policy;
    (c) unique to the climate change debate (and possibly finance);
    (d) misplaced as, by choice of parameters, expected costs can be made large in thin- or fat-tailed distributions;
    (e) none of the above.

    Correct answers: (d)

26. Let σ_X^2 be the variance of a random variable, X, and $E\{X\}$ be its expected value. Then, if $X = Y + Z$ for independent random variables Y and Z, so that

 $$\sigma_X^2 = \sigma_Y^2 + \sigma_Z^2 + 2E\{(Y - E\{Y\})(Z - E\{Z\})\}$$

    (a) $\sigma_X^2 \geq \sigma_Y^2$;
    (b) $\sigma_X^2 \leq \sigma_Y^2$;
    (c) $\sigma_X^2 \neq \sigma_Y^2$;
    (d) $\sigma_X^2 = \sigma_Y^2 + \sigma_Z^2 + 2\left(E\{Y\} - E^2\{Y\}\right)\left(E\{Z\} - E^2\{Z\}\right)$;
    (e) none of the above.

    Correct answers: (a)

27. Herndon et al. (2014) says that it does "not attempt to integrate [their] discussion … into a broader survey of the literature on public indebtedness and GDP growth" because:

    (a) a full literature survey would exceed their five page limit;
    (b) there was not much of a literature on public sector debt and GDP growth before the Reinhart and Rogoff (2010) dataset;
    (c) the literature supports the Reinhart and Rogoff (2010) position;
    (d) they seek to perform a narrowly gauged critical replication;
    (e) none of the above.

    Correct answers: (d)

28. J. L. Simon (1981) interprets the chart below, depicting the price of wheat, to mean:

(a) human population growth is again causing Malthusian scarcity, overcoming the gains from the 'Green Revolution';
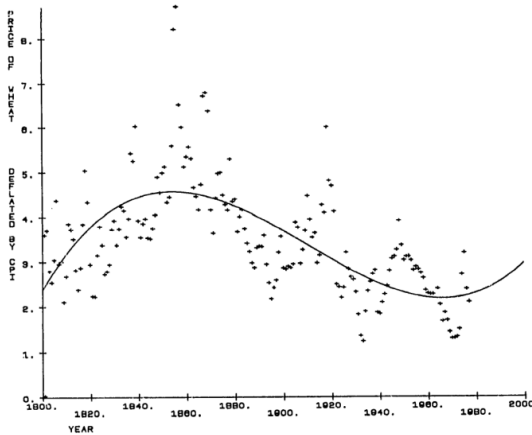
(b) it is easy to find a mathematical technique to prove a point;

(c) prices should be deflated by a sustainable green price index (GPI), with a lower discount factor than the CPI;

(d) late 20th Century society is substituting away from wheat-based cultures towards alternatives, such as Asian rice-based cultures;

(e) none of the above.

Correct answers: (b)

29. In Weitzman's view, economists studying climate change should use BCA

   (a) never;
   (b) to organise information and keep score;
   (c) when seeking to impress upon policy makers the huge potential damages arising from climate change;
   (d) only when tails are not fat;
   (e) none of the above.

Correct answers: (b)

30. The 'value of a statistical life' (VSL) is

   (a) the amount of money an individual would pay, if faced with death, to prevent it;
   (b) often used to assess medical interventions as it incorporates quality of life;
   (c) is typically derived from mortality tables by government statisticians;
   (d) increases as consumption approaches zero;
   (e) none of the above.

Correct answers: (e)

31. The most basic challenge to the efficient markets hypothesis, according to Shiller (2003), is

   (a) the ability of some professional investors to systematically earn risk-adjusted returns that outperform the market;
   (b) "discontinuity in the sequence of prices … or, worse, a collapse";
   (c) "the restless minds of many academic researchers [who] had turned to other theories";
   (d) excess volatility of stock prices relative to discounted dividend series;
   (e) none of the above.

Correct answers: (d)

32. According to J. L. Simon (1981), "the historical trend of all measures of cost and price for mined resources is"

    (a) "worrying";
    (b) "misleading";
    (c) "downward";
    (d) "out of date";
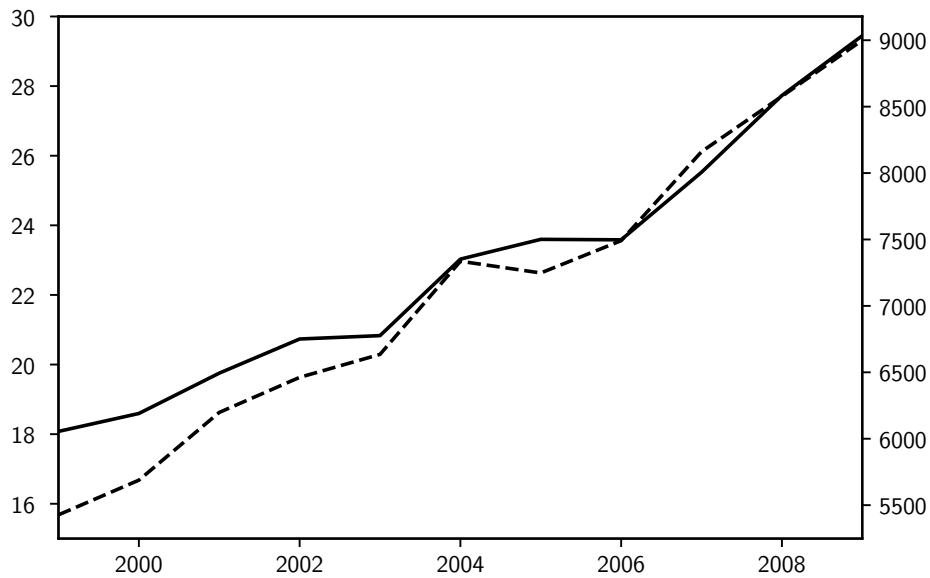   (e) none of the above.

Correct answers: (c)

33. According to Samuelson, a key difference between Friedman's position and that of — say — Newton, is that

    (a) Friedman does not care why gravitational attraction follows an inverse square law;
    (b) Friedman regards the realism of assumptions as irrelevant;
    (c) Friedman's "idle hands" have been led astray into fruitless "methodological discussion";
    (d) Friedman belongs to the 'Chicago School' of economics;
    (e) none of the above.

Correct answers: (b)

34. Herndon et al. (2014) differs from Reinhart and Rogoff (2010) by

    (a) including observations separately for each country and year;
    (b) including observations separately for each country;
    (c) including observations separately for each year;
    (d) pooling all observations to maximise sample size;
    (e) none of the above.

Correct answers: (a)

35. From the two time series below, we may infer that

(a) the dashed series causes the solid series;

(b) the solid series causes the dashed series;

(c) the dashed and solid series are mutually causal;

(d) the dashed and solid series are statistically independent;

(e) none of the above.

Correct answers: (e)

36. Webber (2014) found that, by examining birth cohorts 1955–64, 1965–74 and 1975–84, there had been

(a) "a moderate convergence over time in the return to the various major categories";
(b) "a divergence over time in the return to the various major categories in favour of more technical disciplines";
(c) "a divergence over time in the return to the various major categories in favour of liberal arts disciplines";
(d) "a moderate convergence over time in the return to the various major categories only when corrected for selection";
(e) none of the above.

Correct answers: (a)

37. In Spence's leading example, why does the 'low productivity' type not invest in education?

(a) to avoid being mistaken for a 'high productivity' type;
(b) because it is more expensive than for 'high productivity' types;
(c) because education does not raise productivity;
(d) because it is too expensive;
(e) all of the above.

Correct answers: (b)

38. J. L. Simon takes issue with Ehrlich's style because

    (a) *Social Science Quarterly*, which published their exchange, seeks to make academic debates more accessible to the general public;
    (b) he thought that Ehrlich's caution risked leading people to underestimate the importance of environmental problems;
    (c) J. L. Simon's substantial arguments are weaker than Ehrlich's;
    (d) "the world may yet pay a dreadful price for the public behavior of scientists who depart from … fact to indulge … in hyperbole";
    (e) none of the above.

    Correct answers: (d)

39. According to Ehrlich (1981b), ecologists and economists have almost opposite beliefs on

    (a) whether we are 'running out' of nonfuel mineral resources;
    (b) the importance of mathematical models;
    (c) a perception that physics and molecular biology are "unbelievably 'neat' ";
    (d) the mobilisation of energy to meet society's needs;
    (e) none of the above.

    Correct answers: (d)

40. Shiller agrees with Samuelson that

    (a) "the [stock] market can stay crazy longer than you can stay solvent";
    (b) realistic conclusions are equivalent to realistic assumptions;
    (c) more arbitrage opportunities exist at the aggregate level than at the level of individual stocks;
    (d) the stock market is "micro efficiency but macro inefficient";
    (e) none of the above.

    Correct answers: (d)

41. H. A. Simon might support the microfoundations of macroeconomics project because

    (a) it unifies micro and macroeconomics;
    (b) he was intellectually curious and supportive;
    (c) he disagreed with Friedman;
    (d) it builds complex behaviour from simple components;
    (e) none of the above.

    Correct answers: (d)

42. If health risks are independent across people, then the optimal risk pool involves

    (a) self-insurance for 'high risk' types but government-provided insurance for 'low risk' types;
    (b) self-insurance for all risk types;
    (c) government-provided insurance for all risk types;
    (d) a single pool;
    (e) none of the above.

    Correct answers: (d)

43. Malkiel (2003) does not regard short-run serial correlation as a threat to the efficient markets hypothesis because:

    (a) it is small relative to transaction costs;
    (b) it is large relative to transaction costs;
    (c) his belief in the efficient markets hypothesis is faith-based;
    (d) it is offset by long-run mean reversion;
    (e) none of the above.

    Correct answers: (a)

44. According to Pindyck (2011),

    (a) "depending on parameter values, [climate change] models can yield either thin- or fat-tailed distributions";
    (b) "proper calibration of [climate change] models allow us to test alternative distributional hypotheses about tail thickness";
    (c) "if the concern is a catastrophic outcome, then perhaps it is more conservative to assume that the relevant distribution is thin-tailed";
    (d) "large, complex, and regionally disaggregated [climate change] models are less subject to parameter uncertainty than compact and highly aggregated models";
    (e) none of the above.

    Correct answers: (a)

45. Weitzman (2011) used a Pareto distribution as

    (a) he is interested in the welfare effects of future climate change;
    (b) it offers a close contrast to the Normal distribution;
    (c) Pareto developed it to model climate change;
    (d) it gives less weight to small changes than does the Normal;
    (e) none of the above.

    Correct answers: (d)

46. According to Spence (1973),

    (a) education does not raise anyone's productivity;
    (b) all in all, education is just another brick in the wall;
    (c) a graduate premium may just reflect employers' ability to distinguish between candidates' intrinsic productivity levels;
    (d) a graduate premium may reflect employers' ability to identify candidates from the same social class as they are;
    (e) none of the above.

    Correct answers: (c)

47. The most basic challenge to the efficient markets hypothesis, according to Malkiel (2003), is

   (a) the ability of some professional investors to systematically earn risk-adjusted returns that outperform the market;
   (b) "discontinuity in the sequence of prices … or, worse, a collapse";
   (c) "the restless minds of many academic researchers [who] had turned to other theories";
   (d) excess volatility of stock prices relative to discounted dividend series;
   (e) none of the above.

   Correct answers: (e)

48. Reinhart and Rogoff (2010) regard debts incurred during wartime as

   (a) more important than debt incurred during peacetime due to their very high levels;
   (b) less important than debt incurred during peacetime once the war incurring them ends;
   (c) more odious than debt incurred during peacetime due to the likelihood that they financed war crimes;
   (d) less relevant than debt incurred during peacetime due to over 70 years' discounting since the end of WWII;
   (e) none of the above.

   Correct answers: (b)

49. The assets specified in Ehrlich's response to J. L. Simon's bet were:

   (a) chromium, copper, nickel, tin and tungsten;
   (b) carbon, nitrogen, oxygen, sulfur and hydrogen;
   (c) timber, oil, fish, natural gas and wheat;
   (d) rivets, airplanes, pests, parasites and deserts;
   (e) none of the above.

   Correct answers: (a)

50. According to Ehrlich (1981b), which of the following can ecology provide to policy makers:

   (a) specific predictions on limited problems like broadcast use of pesticides won't control insect populations in the medium term;
   (b) a description of human dependence on public service functions of the ecosystem;
   (c) an extremely conservative approach to humanity's treatment of Earth's ecosystems;
   (d) all of the above;
   (e) none of the above.

   Correct answers: (d)

References

Arrow, K. J. (1963). Uncertainty and the welfare economics of healthcare. *American Economic Review, 53*(5), 941–973.

Ehrlich, P. R. (1981a). An economist in wonderland. *Social Science Quarterly*, *62*(1), 44–49. Last updated - 2013-02-22.

Ehrlich, P. R. (1981b). Environmental disruption: Implications for the social sciences. *Social Science Quarterly*, *62*(1), 7–22.

Friedman, M. (1953). *Essays in positive economics*. Chicago: University of Chicago Press.

Herndon, T., Ash, M., & Pollin, R. (2014). Does high public debt consistently stifle economic growth? a critique of reinhart and rogoff. *Cambridge Journal of Economics*, *38*(2), 257–279.

Malkiel, B. G. (2003). The efficient market hypothesis and its critics. *Journal of Economic Perspectives*, *17*(1), 59–82.

Nordhaus, W. D. (2011). The economics of tail events with an application to climate change. *Review of Environmental Economics and Policy*, *5*(2), 240–257.

Pindyck, R. S. (2011). Fat tails, thin tails, and climate change policy. *Review of Environmental Economics and Policy*, *5*(2), 258–274.

Reinhart, C. M., & Rogoff, K. S. (2010). Growth in a time of debt. *American Economic Review*, *100*(2), 573–78.

Samuelson, P. A. (1963). Discussion. *American Economic Review*, *53*(2), 231–236. Retrieved from http://www.jstor.org/stable/1823866

Shiller, R. J. (2003). From efficient markets theory to behavioral finance. *Journal of Economic Perspectives*, *17*(1), 83–104.

Simon, H. A. (1963). Discussion. *American Economic Review*, *53*(2), 229–231. Retrieved from http://www.jstor.org/stable/1823866

Simon, J. L. (1981). Environmental disruption or environmental repair? *Social Science Quarterly*, *62*(1), 30–43.

Spence, M. (1973). Job market signaling. *The Quarterly Journal of Economics*, *87*(3), 355–374.

Thaler, R. H., & Sunstein, C. R. (2003). Libertarian paternalism. *American Economic Review*, *93*(2), 175–179.

Walker, I., & Zhu, Y. (2013, August). *The impact of university degrees on the lifecycle of earnings: Some further analysis* (research paper No. 112). Department for Business, Innovation and Skills.

Webber, D. A. (2014). The lifetime earnings premia of different majors: Correcting for selection based on cognitive, noncognitive, and unobserved factors. *Labour Economics*, *28*, 14–23.

Weitzman, M. L. (2011). Fat-tailed uncertainty in the economics of catastrophic climate change. *Review of Environmental Economics and Policy*, *5*(2), 275–292.