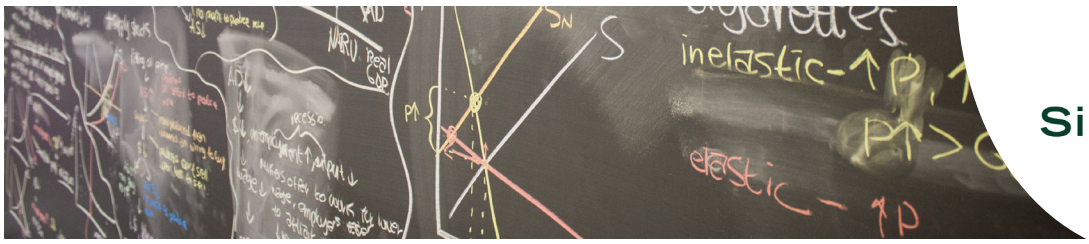


Sightline INSTITUTE

Grading Economics Textbooks on Climate Change
2014 Update

Yoram Bauman, Ph.D.
August 2014

INTRODUCTION

With a new school year approaching, this is a good time to update our review of the treatment of climate change in economics textbooks. As in our 2010 and 2012 reviews, some books hit the mark while others are wildly misleading, but we're happy to say that there's plenty of good news, especially at the top and the bottom of the grade distribution.

The big news at the top of the class is the first-ever grade of A+, awarded to Parkin's *Economics* (11th ed.). Readers might suspect grade inflation at work here, especially since 9 of the 18 books reviewed received a grade of A- or better, but the truth is that these books are earning their good marks. The Parkin textbook, for instance, notes that its climate material was extensively revised from the last edition, which had "only" earned a B+.

In general, the treatment of climate change in economics textbooks is improving. This is even evident from the progress shown by former bottom-dwellers. Miller's *Economics Today* (17th ed.), which earned an F last time around and was deemed the worst of the worst, improved to a C-, and Arnold's *Economics* (11th ed.) improved from a D- to a B-.

Some texts did suffer a bit of backsliding, notably McConnell, Brue, and Flynn's *Economics* (20th ed.). This book was downgraded from C to C- and returns to the "Not Recommended" list because of its sheer incompetence. The three other textbooks on the "Not Recommended" list earned their place because the authors' strong political convictions overwhelm their ability to present basic facts. These authors should learn from leading conservative economists Greg Mankiw and Glenn Hubbard, whose books respectively earned an A and A-.

And that brings us to the bottom of the list: Gwartney, Stroup, Sobel, and Macpherson's *Economics: Private and Public Choice* (15th ed.) earns the undesired 2014 Ruffin and Gregory Award for the Worst Treatment of Climate Change in an Economics Textbook. (The award is named after the ridiculously bad treatment of climate change in a textbook that is now thankfully out of print.)

2014 Report Card

Grading the treatment of climate change in economics textbooks

Recommended	*Grade*
Parkin *Economics*, 11th ed. (Prentice Hall, 2013)	A+
O'Sullivan, Sheffrin, and Perez *Economics: Principles, Applications, and Tools*, 8th ed. (Prentice Hall, 2013)	A
Dolan *Introduction to Economics*, 5th ed. (BVT Publishing, 2013)	A
Colander *Economics*, 9th ed. (McGraw-Hill/Irwin, 2012)	A
Mankiw *Principles of Economics*, 7th ed. (Cengage Learning, 2014)	A
Krugman and Wells *Economics*, 3rd ed. (Worth, 2012)	A
Hubbard and O'Brien *Economics*, 5th ed. (Prentice Hall, 2014)	A-
Baumol and Blinder *Economics: Principles and Policy*, 12th ed. (Cengage Learning, 2011)	A-
Chiang *CoreEconomics*, 3rd ed. (Worth, 2013)	A-
Case, Fair, and Oster *Principles of Economics*, 11th ed. (Prentice Hall, 2013)	B+
Arnold *Economics*, 11th ed. (Cengage Learning, 2014)	B-
Recommended with reservations	
Frank and Bernanke *Principles of Economics*, 5th ed. (McGraw-Hill/Irwin, 2012)	C+
Cowen and Tabarrok *Modern Principles of Economics*, 2nd ed. (Worth, 2011)	C+
Hall and Lieberman *Economics: Principles and Applications*, 6th ed. (Cengage Learning, 2013)	C+
Not recommended	
McConnell, Brue, and Flynn *Economics*, 20th ed. (McGraw-Hill/Irwin, 2014)	C-
Miller *Economics Today*, 17th ed. (Prentice Hall, 2013)	C-
Schiller, Hill, and Wall *The Economy Today*, 13th ed. (McGraw-Hill/Irwin, 2012)	D+
Gwartney, Stroup, Sobel, and Macpherson *Economics: Private and Public Choice*, 15th ed. (Cengage, 2014)	D-

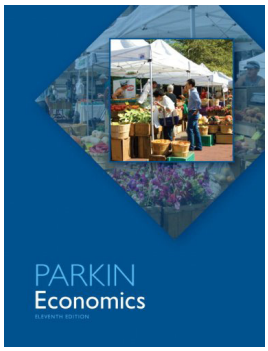
As detailed below, the Gwartney et al. book is also ridiculously bad, with "facts" about climate science that are off by factors of up to 1,000. The good news is that even this textbook has improved a little bit (from an F to a D-), perhaps because of feedback the authors and publisher received after an earlier edition received the inaugural Ruffin and Gregory Award in 2010.

In the hopes that additional feedback can help improve the book even more, I hope you will join me in sending a note (a polite one, please!) to the publisher's representative at Cengage, John Carey (john.carey@cengage.com), and to the authors themselves: James Gwartney (jdgwartney@fsu.edu), Richard Stroup (rstroup@unity.ncsu.edu), Russell Sobel (russell.sobel@citadel.edu), and David Macpherson (david.macpherson@trinity.edu).

Please don't get carried away. The most threatening statement you should even consider making is to tell Cengage that if they don't drop the Gwartney et al. book you will stop using Cengage's other economics books (Mankiw, Hall/Lieberman, Baumol/Blinder, and Arnold) or their other services, like Aplia. You might also mention that this book lines up poorly with another part of Cengage: National Geographic Learning.

One more note: Authors are invited to email me at yoram@standupeconomist.com for free and confidential feedback on draft material related to climate change. You can also get a short and sweet overview of the issue from my new book, *The Cartoon Introduction to Climate Change*.

RECOMMENDED



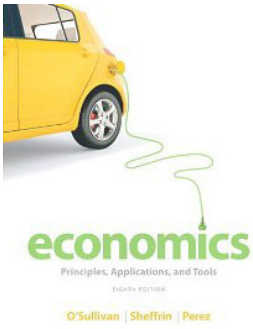
Parkin, Economics, 11th ed.
(Prentice Hall, 2013)

Grade: A+ (previous edition: B+)

From the book:

> Burning fossil fuels to generate electricity and to power airplanes, automobiles, and trucks pours a staggering 28 billion tons—4 tons per person—of carbon dioxide into the atmosphere each year...The amount of global warming caused by economic activity and its effects are uncertain, but the emissions continue to grow and pose huge risks.
>
> The trends in local U.S. air quality and global greenhouse gas concentrations are starkly opposing...Figure 2 shows the global trends in carbon dioxide (CO_2) concentration and temperature. Both trends are starkly upward...Scientists agree that the scale on which we burn fossil fuels is the major source of the rising CO_2 trend. There is more uncertainty about the effect of the increase in CO_2 on global temperature, but the consensus is that the effect is significant.
>
> A lower CO_2 concentration in the world's atmosphere is a *global public good*. And like all public goods, it brings a *free-rider problem*...But some governments have set an example and introduced a carbon tax. Among them are the Canadian province of British Columbia and Australia.

In a preface addressed to instructors, the author notes that "three topics have been substantially revised...[including] carbon emissions and climate change externalities." The result is fantastic, with great climate science graphs and summaries, a fabulous comparison of local and global air pollution trends, and thought-provoking discussions of the economics, including a "debate" between Nicholas Stern and Bjorn Lomborg about whether we should be doing more to reduce carbon emissions.



O'Sullivan, Sheffrin, and Perez, *Economics: Principles, Applications, and Tools*, 8th ed.
(Prentice Hall, 2013)

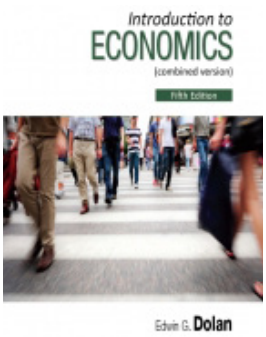
Grade: A (previous edition: A-)

From the book:

> One of our most challenging environmental problems concerns climate change...In a recent report, the IPCC [concludes that] warming of the climate system is unequivocal [and that] the energy balance of the climate system has been altered by changes in (a) atmospheric concentrations of greenhouse gases (GHGs) and aerosols, (b) land cover, and (c) solar radiation. Between 1970 and 2004, the GHG emissions from human activities increased by 70%.
>
> An ongoing environmental issue is how to respond to the problem of global warming caused by greenhouse gases. One approach is to tax carbon-based fuels...Carbon taxes have been imposed by governments around the world. In Canada, the province of British Columbia has a revenue-neutral carbon tax of $30 per ton of CO_2. The revenue raised from the carbon tax is returned to taxpayers through reductions in taxes on personal and business income.

Chapter 31 ("External Costs and Environmental Policy") expands the treatment of climate change to include terrific paragraphs (such as the ones excerpted above) on climate science and on British Columbia's carbon tax.

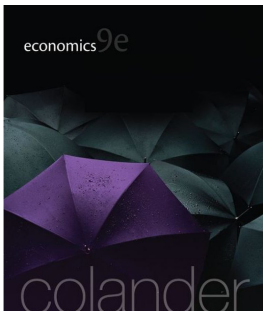
I have a few minor quibbles about the first paragraph quoted above: land cover and solar radiation are quite minor factors (see Figure SPM.5 in the latest IPCC report), and the authors should update the carbon emissions data because the last decade has seen a sharp increase in these emissions (see Figure TS.4 in the same report). But these are small criticisms of an otherwise terrific presentation.



Dolan, *Introduction to Economics*, 5th ed.
(BVT Publishing, 2013)

Grade: A

No changes since our 2012 review on an advance copy of the book.

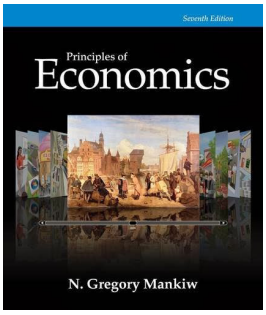


Colander, *Economics*, 9th ed.

(McGraw-Hill/Irwin, 2012)

Grade: A

No substantive relevant updates since our 2012 review.



Mankiw, *Principles of Economics*, 7th ed.

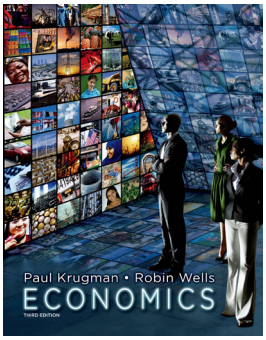
(Cengage Learning, 2014)

Grade: A (previous edition: A)

This textbook continues to be terrific, and I'm not saying that just because it now includes an op-ed I co-authored on the carbon tax in British Columbia. It would be even better, however, if there were a stronger treatment of climate science and if the reference to "meteorologists" on page 30 was changed to "climatologists." More importantly, the author should rewrite the following material from the introduction to the chapter on taxation:

> When the government remedies an externality (such as air pollution), provides a public good...or regulates the use of a common resource...it can raise economic well-being. Yet these activities are costly. For the government to perform these and its many other functions, it needs to raise revenue through taxation.

This text ignores the idea of environmental taxation, which is quite a shock coming from Professor Mankiw, given that he is the founder of the Pigou Club and a staunch advocate of the use of environmental taxes to remedy externalities.



Krugman and Wells, *Economics*, 3rd ed.
(Worth Publishers, 2012)

Grade: A

No new edition since our 2012 review.

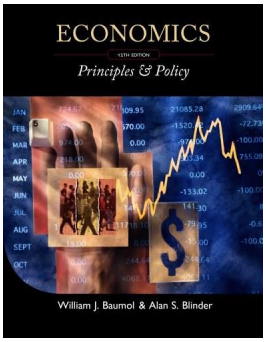
Hubbard and O'Brien, *Economics*, 5th ed.
(Prentice Hall, 2014)

Grade: A- (previous edition: A)

The updates in this edition are relatively minor, which is fine because the treatment of climate change in the previous edition was excellent. But the authors need to correct a few mistakes that persist in the new edition, notably this statement:

> If greenhouse gases continue to accumulate in the atmosphere, according to some estimates global temperatures could increase by 3 degrees Fahrenheit or more during the next 100 years.

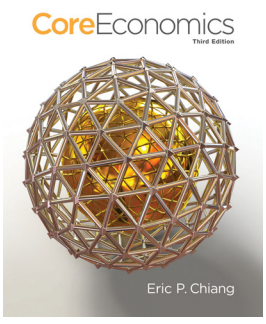
A better ballpark for business-as-usual temperature change over this century is 4 degrees Celsius, or about 7 degrees Fahrenheit. And the mention of the carbon tax in British Columbia (page 152) should note that proceeds are used to reduce corporate income taxes as well as personal income taxes.



Baumol and Blinder, *Economics: Principles and Policy*, 12th ed.
(Cengage Learning, 2011).

Grade: A-

No new edition since our 2012 review.



Chiang, *CoreEconomics*, 3rd ed.
(Worth Publishers, 2013)

Grade: A- (previous edition: A-)

From the book:

> There is growing scientific consensus that without a significant reduction in emissions, global warming from the buildup of greenhouse gases is likely to lead to irreversible damage to the climate, ecosystems, and coastlines.
>
> Global climate change is a huge negative externality with an extremely long time horizon... Balancing the current generation's costs and benefits against the potential harm to future generations raises difficult economic issues.
>
> Actions taken today to reduce a potential future calamity are a form of insurance.

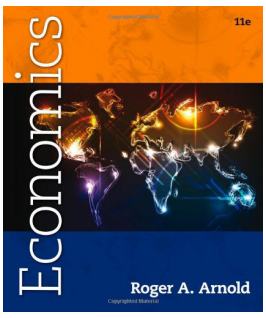
Authorship of this textbook has passed from Gerald Stone to Eric Chiang, whose treatment of climate change takes the excellent material in the previous edition and improves upon it. As noted in our 2012 review, chapter 13 ("Externalities and Public Goods") has a long section on climate change, and the book "does an excellent job of covering lots of the essential issues, including intergenerational equity, the cumulative nature of CO_2 emissions, the public goods aspect of the problem, and (rare in economics books) a solid treatment of climate change impacts."

Minor quibbles: Some of the references (Socolow et al. 2004, Stern 2007) are getting a bit dated. Also, the book doesn't seem to explicitly link greenhouse gas emissions to burning fossil fuels and deforestation. Finally, the treatment of the Coase theorem repeatedly references "the" optimal allocation of resources rather than "an" optimal allocation of resources; it is not true that there is only one Pareto efficient outcome, and it is not true that the Coase theorem says that you'll always end up at the same one.

Case, Fair, and Oster, *Principles of Economics*, 11th ed.
(Prentice Hall, 2013)

Grade: B+ (previous edition: A-)

No substantive relevant updates were made since our 2012 review, but the text is starting to show significant signs of aging (e.g., the authors use the word "recently" to refer to the SO_2 cap-and-trade system implemented under the 1990 Clean Air Act Amendments). (Given recent developments with both SO_2 and CO_2, the entire discussion of acid rain is worth replacing with a discussion of climate change.) Another example of aging comes in the discussion of climate policy: "Europe took the problem of global warming seriously by implementing [a cap-and-trade system] in 2005. . . . The allowances are given [away] free of charge even though the allowances will trade at a high price once they are distributed." This statement overlooks the fact that permit prices have actually been shockingly low.



Arnold, *Economics*, 11th ed.
(Cengage Learning, 2014)

Grade: B- (previous edition: D-)

From the book:

> Scientists generally agree that human-made global warming is happening and that it is caused by an increase in greenhouse gases (principally carbon dioxide), which mainly results from burning fossil fuels. There is also general scientific agreement that global warming could lead to significant planetary impacts, of which increasing global temperature is only one.
>
> What does not always garner widespread agreement—especially widespread public agreement—are the answers to several questions [including] How fast will temperatures rise? [and] Will the climate change be beneficial or adverse?

> Thus, emissions taxes and tradable pollution permits wind up creating different kinds of uncertainty...These uncertainties can be important, but they don't change the fundamental similarities between emission taxes and tradable permit systems.

Chapter 31 ("Market Failure: Externalities, Public Goods, and Asymmetric Information") has a long section (31-3) that focuses on climate change. The treatment in this section is excellent, especially the comparison of command and control, carbon taxes, and cap-and-trade. (Oddly, the general discussion of environmental policy in section 31-2 is much weaker; it includes only a small section on pollution taxes, nothing explicitly about cap-and-trade, and a lengthy discussion of "Pigou versus Coase" that strongly but incorrectly suggests that Coasian-style bargaining can always solve externality problems.)

There's also a great section (pages 717-18) about whether letting firms "pay to pollute" is morally wrong. And section 25-6d has an excellent treatment of global warming and the prisoners' dilemma.

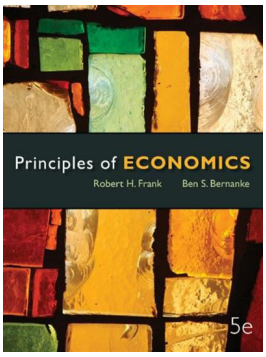
Quibbles:

Section 25-6d claims that the principal causes of past climate fluctuations were "the sun's emissions and volcanic activity." It's true that these have influenced Earth's climate, but the principal driver of the ice ages of the past 2 million years, for example, was changes in the Earth's orbit around the sun. Similarly, section 31-3 implies that all radiation from the sun is short-wave (visible and ultraviolet). This is not true because the sun also emits plenty of long-wave (infrared) radiation.

Section 26-2f has a feature on "unintended effects of regulation," with a hypothetical example of a law requiring cars to get higher gas mileage, resulting in people driving so much more (because of the higher mileage) that miles driven and pollution actually increase. This section would be much stronger if there were some actual empirical evidence to support this possibility. Right now it just sounds like the Laffer Curve idea—theoretically possible, practically dubious—that cutting taxes can increase government revenue.

Section 31-2 has a supply and demand curve titled "A Corrective Tax Gone Wrong," which seems unfair, given that there is no curve showing a corrective tax gone right. More importantly, the author asserts that the Coase theorem states that as long as transaction costs are zero, "the resource allocative outcome will be the same no matter who is assigned the property right." This is wrong. The outcome will be efficient but it will not necessary be the same. (Giving Alaskan property rights to the Sierra Club would produce a different outcome than giving them to an oil company would.)

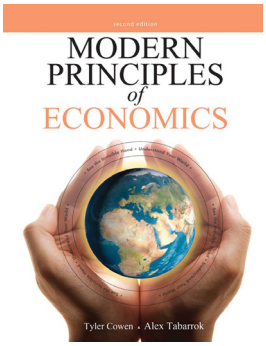
RECOMMENDED WITH RESERVATIONS



Frank and Bernanke, *Principles of Economics*, 5th ed.
(McGraw-Hill/Irwin, 2012)

Grade: C+

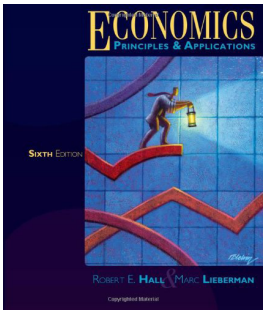
No new edition since our 2012 review.



Cowen and Tabarrok, *Modern Principles of Economics*, 2nd ed.
(Worth Publishers, 2011)

Grade: C+

No new edition since our 2012 review.

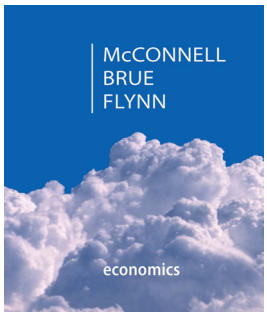


Hall and Lieberman, *Economics: Principles and Applications*, 6th ed.
(Cengage Learning, 2013)

Grade: C+

The relevant portions of this text have changed little from the previous edition, which we covered in our 2010 review. A scant half page is devoted to climate change, and that meager space is mostly wasted on a discussion of the Kyoto Protocol that sounds like (and is) ancient history. On the plus side, the book still has an excellent sidebar that integrates pollution taxes with public finance.

NOT RECOMMENDED



McConnell, Brue, and Flynn, *Economics*, 20th ed.
(McGraw-Hill/Irwin, 2014)

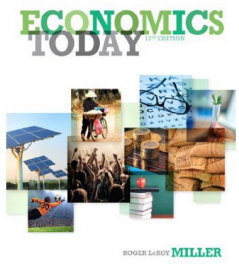
Grade: C- (previous edition: C)

It is hard to believe that this is one of the three best-selling textbooks in the country. I can only hope that capitalism is working to change that.

In our 2010 review we noted that we had found "multiple errors that would make Wikipedia blush." In our 2012 review there was some improvement ("Wikipedia would merely wince.") But now the blushing is back. One of the changes from the previous edition is a claim that "a cap of 5 billion tons of CO_2 [per year in the United States] would be about 25 percent below 2010 emissions levels for that molecule." The previous edition posited 10 percent below 2009 levels, which was much closer to the mark. (The EPA's 2012 GHG Inventory puts US CO_2 emissions at 5.5 billion metric tons in 2009 and 5.7 billion tons on 2010.)

Unfortunately, this is one of the few changes from the previous edition. You can still find a completely incorrect argument about how carbon taxes are easier to enforce than cap-and-trade. You can still find the (increasingly dated) claim that the SO_2 cap-and-trade system is working well. You can even still find the same odd example about "biodiesel factories that convert dead animal parts into fuel."

As you can see, the authors need to make major revisions.



Miller, *Economics Today*, 17th ed.
(Prentice Hall, 2013)

Grade: C- (previous edition: F)

From the book:

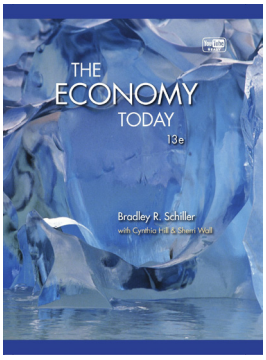
How much of your weekly wages are you willing to sacrifice to be used to reduce aggregate emissions of carbon dioxide, a gas that you exhale every time you breathe?

> In recent years, certain scientific research has suggested that emissions of carbon dioxide and various other so-called greenhouse gases might be contributing to atmospheric warming. The result, some scientists fear, might be global climate changes harmful to people inhabiting various regions of the planet.
>
> Although the exact annual costs of California's [global warming] program to the state's households may not be tabulated until early 2014, most estimates indicate the costs will amount to hundreds of dollars per household per year. Businesses will face significant cost increases as well, which most economists anticipate will lead to dampened employment prospects in the state. Some observers are predicting that a number of California firms will respond to higher energy costs by moving their operations to other Western states.

The previous edition of this book was the winner of the 2012 *Ruffin and Gregory Award for the Worst Treatment of Climate Change in an Economics Textbook*, but this update is much better.

One reason is that the author removed a lot of bad material. In particular, the second quote above is now the only thing that Miller says about climate science. What's here is not great ("recent years" actually goes back to 1896, and the scientific consensus on anthropogenic climate change is much stronger than Miller's waffling) but it's not terrible, and that's a tremendous improvement from the previous edition.

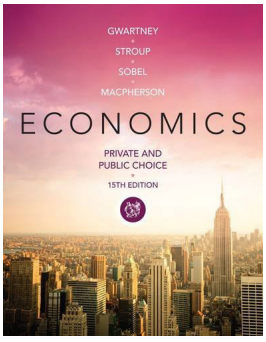
But this update is also a big improvement because of what Miller has added. Chapter 31 ("Environmental Economics") starts by noting that the EPA's SO_2 trading program has collapsed (which is true) and goes on to note that California has failed to get other Western States to join its cap-and-trade system, that the EU's Emissions Trading Scheme "has yielded mixed results to date," and that carbon pricing policies lead to higher prices for energy and airplane tickets. His treatment is completely one-sided—all costs and no benefits—but it provides a good counterweight to the opposing argument that climate policy yields all benefits and no costs.



Schiller, Hill, and Wall, *The Economy Today*, 13th ed.
(McGraw-Hill/Irwin, 2012)

Grade: D+

No new edition since our 2012 review.



Gwartney, Stroup, Sobel, and Macpherson, *Economics: Private and Public Choice*, 15th ed.
(Cengage Learning, 2014)

Grade: D- (previous edition: F)

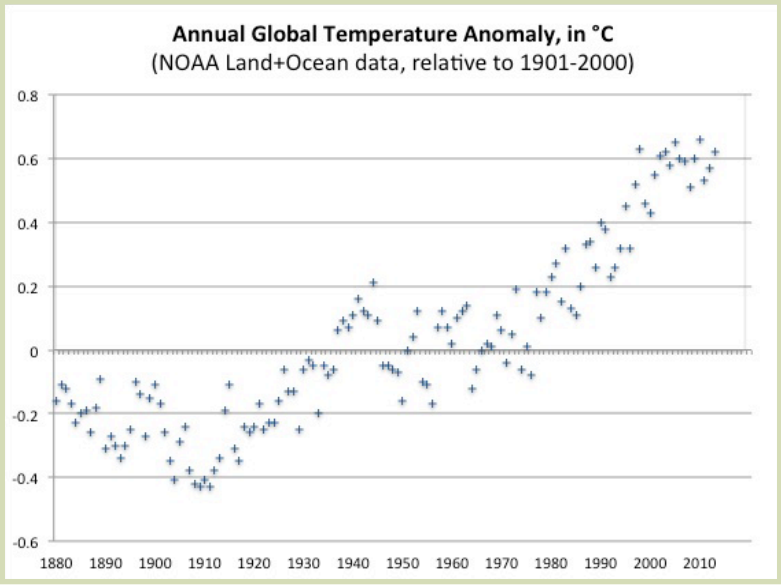
From the book:

> In recent years, predictions of runaway rising temperatures, based on the work of some scientists, have been strongly endorsed by national environmental groups and extensively discussed in the media. But the Earth's temperatures have been flat since 1998...This occurred even though the world produced [about] 100 billion tons of carbon between 2000 and 2013.
>
> Most predictions of significant temperature increases are based on giant computer models of Earth's atmosphere, but these models are full of information gaps...The models assume that water vapor and clouds will increase the warming effect. Indeed, in the models, they

> are assumed to be 10 to 20 times as important in raising future temperatures as is carbon dioxide itself. But it is quite possible that the water vapor won't increase with carbon dioxide in the way that the models assume and that changes in clouds, on balance, will do little to add to warming or might even be, on balance, a force for cooling.
>
> The estimated costs, the special-interest involvement, and the scientific uncertainties leave many economists unwilling to recommend strong regulations to reduce emissions of carbon dioxide.
>
> Global temperature changes have been observed previously; we do not know for certain if the current warming stems primarily from human activity.
>
> Critical analysis question 3: "The buildup of carbon dioxide and other gases in the air threatens to warm the planet and cause enormous damage worldwide. We must immediately stop this buildup for the sake of future generations." Why do many economists disagree with this statement?

There's plenty of bad news about this book. The authors continue to set up straw man arguments: exactly which "predictions of runaway rising temperatures" are the authors referring to? And they continue to craft misleading statements like "We do not know for certain if the current warming stems primarily from human activity" (true, but the scientific community says it is "very likely") and the "critical analysis question" above, which mistakenly implies that stopping emission cold-turkey is the only alternative to business as usual. Also, they are still extremely sloppy with numbers: the "10 to 20 times as important" phrase in the second quote above is off by about a factor of 5, and elsewhere (in discussing the "8.7 trillion metric tons" of CO_2 emissions from China in 2011) they are off by a factor of 1000.

As for "Earth's temperatures have been flat since 1998," judge for yourself if that's the most important statement about the data:



Source: Author's calculations based on NOAA data.

But here's the good news: I have relevant excerpts from six editions of this textbook, going back to 1997, and it's getting better. Gone is the conspiracy theory that climate scientists are creating a panic to get their hands on "billions of dollars going into global warming research." Gone is the claim that "the current warming trend may well be unrelated to the emissions of carbon dioxide and other greenhouse gases into the atmosphere." Gone is the introduction of carbon dioxide as "an essential food for plants." Even the claim that water vapor and clouds are "10 to 20 times as important" as carbon dioxide is an improvement: the 8th edition (1997) says that water vapor and clouds are *50 times* as important as carbon dioxide. (Climate science suggests that the correct number about 3.)

Slowly but surely this textbook appears to be moving in a more reasonable direction. Selected quotes even generate a pretty reasonable overview of climate science:

> Burning fuels such as coal, oil, and natural gas emits carbon dioxide...Although carbon dioxide represents a tiny part of the atmosphere, it is a "greenhouse" gas [that] contributes to the formation of an invisible blanket that traps some heat on Earth that would otherwise be radiated into space...Higher levels of carbon dioxide may have contributed to the 1.4 degree Fahrenheit increase in the Earth's temperature over the past century.

So the good news is that even this book no longer merits an F. The bad news is that still merits a D- and has once again won the Ruffin and Gregory Award for the Worst Treatment of Climate Change in an Economics Textbook. Please join me in sending a note (a polite one, please!) to the publisher's representative at Cengage, John Carey (john.carey@cengage.com), and to the authors themselves: James Gwartney (jdgwartney@fsu.edu), Richard Stroup (rstroup@unity.ncsu.edu), Russell Sobel (russell.sobel@citadel.edu), and David Macpherson (david.macpherson@trinity.edu).

About the Author

Yoram Bauman is a carbon tax fellow at Sightline Institute. He has a Ph.D. in economics from the University of Washington and is the co-author of *The Cartoon Introduction to Climate Change* and the two-volume *Cartoon Introduction to Economics*.

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