

## **Introductory Economics: One class's lasting impacts on climate and social policy.**

The alarm bells of climate change have been ringing since the 1970s. Scientists and conservationists alike have preached about the potentially devastating effects of anthropogenic climate change. Floods, droughts, famine, and war are just a few of the real and well documented tragedies that could occur from inaction on this global issue. A study completed by the Yale Program on Climate Change Communication showed that seven out of ten U.S. residents agree human-caused climate change is happening, and the same study showed 64% of Americans say climate change is “extremely, very, or somewhat” important to them.<sup>1</sup> This begs the question: since climate change has the potential for such devastating consequences and there seems to be popular support for climate action, why has there not been more success in climate change policy in the US and in its cities? Traditional environmental activists have tried for years to formulate effective policy to fight climate change and biodiversity loss with little success. To better understand this phenomenon, there must be an understanding of society's current relationship with the environment, government, and the economy and the assumptions society shares about their functions. Further, there must be an acknowledgement of the ways systemic racism and market capitalism shapes society's relationship with the institutionalized ideas of the environment and the economy, as well as the manners in which these forces prevent the realization of environmental justice. In other words, we need to step back and examine the framework through which we view the ‘economic’ world and its relation to the ‘environmental’ world.

This paper explores failures in climate and social policy by studying mainstream economic framing in relation to the environment, and the constraints that framing presents in

terms of climate action. To overcome these failures in framing, I draw on alternative economics, including the mindset of doughnut economics to suggest more productive economy-environment positions.

Qualitative research was conducted through semi-structured interviews with students and professors at UT Austin, and a discourse and content analysis of economic academic syllabi. Specifically, I interviewed three economics professors at UT Austin and five UT Austin students that have taken introductory economic courses. Due to the COVID-19 pandemic, the semi-structured interviews were conducted over Zoom. The interviews lasted roughly from 20 minutes to 45 minutes, depending on the availability of the participant. Throughout this paper, I will intermittingly connect qualitative analysis from the interviews with the secondary research I conducted. Due to the small number of participants, the opinions of these students and professors cannot be generalized to speak for all. However, their personal stories about their experiences with learning and teaching economics have valuable insight into the state of the discipline today and provides a useful humanizing factor to the data trends I will present later in this paper. Additionally, I conducted a discourse analysis of the most widely used introductory economics textbook for US universities<sup>2</sup>, which is also the textbook used at UT Austin, and the connection or disconnection it has with student experiences. Together, this research indicates that the study of economics needs a reassessment of its base assumptions so that it can be actively used to promote human welfare today.

### **How Did I End Up Here?**

When I was about nine years old, my dad moved our family to a small town in Central Texas. He started a new job, realized he was actually at a desk job, and quit after about six

months. During this time, my family did not have a lot of money but we had a lot of fun. We would go on camping trips at different state parks, kayak on the lake, or go fishing. My parents then decided to follow their dreams and open up their own business. It was a small, twenty-four-hour fitness facility. From then on, every summer I would sit in my dad's old truck with the windows down (the AC never worked) listening to his Lynyrd Skynyrd albums as my dad drove us to work. I would stay up there for hours, cleaning equipment while watching my dad interact with customers. He knew his customers' families, their kids, their favorite restaurants; he had a way with people that seemed magical to me. In my summers if I wasn't working or playing basketball, I was outside. I lived to breathe in the fresh air and swim down by the lake or explore muddy creeks nearby our house. Overall, my family had enough of what we needed. However, my sophomore year in high school a large corporate chain opened a gym in town. Soon, my parent's gym began to struggle. Before long, my parent's savings were depleted and they sold the home my parents had worked hard to buy, as well as their business. This fits into national trends of small businesses being squeezed out by large corporations, as well as the declining middle class.<sup>3</sup> We moved into a friend's home my senior year, where we stayed for over a year as neither of my parents could find work. The situation unnerved me, but I was about to head off to college and was frankly ready to leave some of the stress behind me. I went to college thinking I was going to do something environmentally related, but I also became interested in economics. I took some entry-level courses (partly in hopes of understanding what happened to my family), but the solutions I found in the textbooks were devoid of my experiences with economics. Unemployment was treated casually and not like the life-altering thing it can be. The environment was cast aside all together. And as I took more geography classes and learned about systemic racism from new friends and new courses, I became more disillusioned with economics

definitions about the market. My parents had done all the ‘right things’ to achieve their American Dream yet in the end, it still wasn’t enough. My family even had privilege in that we had family members and friends who would ensure we would never go hungry, as well as grandparents who benefited from racist housing policies that allowed their houses to increase in income. We are white, and that affords privileges in this society. So, it’s hard for me to imagine the difficulty for people less wealthy than my family and/or of color to make their dreams happen. On a larger scale, I learned about global inequalities and market failures that classical economics just seemed to brush off as unfortunate but necessary by-products. That’s not to say there aren’t economists working hard using modeling to prove universal health-care is a sound economic idea or that the environment must be protected, but rather there’s this pressure in economics to ‘prove’ that protecting the environment is economically friendly. In other words, protecting the environment must, somehow, cause the economy to grow. If that is the case, we need to rapidly redefine what an economy is and include human survival and well-being into it, because economic growth as it’s been as failed to slow down climate change or fix issues of systemic racism in our society. Even though numerous papers have been written on this subject, introductory textbooks haven’t changed much since the 1970s.<sup>4</sup> In the following sections, I’d like to take a deeper look at mainstream economics today through the lens of introductory economics, and connect misunderstandings in mainstream economics to climate and social policy failures.

## **How Did We End Up Here? A Brief History of Mainstream Economics.**

*“We are not makers of history. We are made by history.”*

Martin Luther King, Jr.

To understand economics of today, we need to understand economics of the past. It is estimated that for 90-95% of human existence, economic institutions were organized around communal societies.<sup>5</sup> In other words, tribes, clans, villages, or families ensured the survival of the group by sharing resources between each other. This economic system looks vastly different than the economic system we are familiar with today, and yet, it is the economics of communal survival that has dominated human history. As societies became more complex due to the advent of agriculture, we see the rise of early great civilizations like Mesopotamia and the Indus River Valley civilization. Power structures, religion, writing, and mathematics began to develop in these places. We see the emergence of ideas we associate with economics today: currency, trade, and division of labor.<sup>6</sup> We also start to see recorded evidence of the formal study of economics, with varying definitions of what actually is economic study.

In Ancient Greece, Xenophon coined the word ‘economics’ to describe household management.<sup>7</sup> Aristotle built on the study but was careful to distinguish economics from ‘chrematistics’, or the art of acquiring wealth; “a distinction that seems to have been all but lost today,” according to Oxford economist Kate Raworth.<sup>8</sup> The study of household management was seen as an art form, and it was in poor taste to be too focused on acquiring wealth.<sup>9</sup>

In contrast, middle eastern countries during the Islamic Golden Age viewed increasing wealth as a virtue.<sup>10</sup> The Islamic Golden Age of the 8<sup>th</sup> and 13<sup>th</sup> centuries witnessed complex

trade and cultural exchange networks develop across Asia and the Middle East, and along with them, different ideas on studying economics.<sup>11</sup> Iraqi official Abu Yusuf (731-798) developed theories on taxation, agricultural production, and government responsibilities for societal welfare.<sup>12</sup> He saw a distinction between the private and public sector, but he believed the government to be accountable for using taxation to the benefit of society.<sup>13</sup> Iranian economic thinker Nasir al-Din al-Tusi developed his definition of economics as to be “the study of universal laws governing public interest (welfare?) in so far as they are directed, through cooperation, toward the optimal (perfection)”.<sup>14</sup> Economics at this time was considered a goal-oriented study that involved government, but there were also some lines drawn between the public and private sectors.<sup>15</sup>

Jump forward to the 18<sup>th</sup> century and we see moral philosopher Adam Smith step onto the scene. Known as the father of modern economics, Smith’s ideas have come to dominate mainstream ideas today. However, his own words indicate he might not have been such the free-market enthusiast that some contemporary economists like Milton Friedman make him out to be.<sup>16</sup> He did not see human beings as fundamentally rational, as is common in modern day economics, nor did he desire a market free of government influence.<sup>17</sup> However, his ideas about self-interest being beneficial for the common good, the division of labor in society, and pricing mechanisms of supply and demand took off among leading thinkers of his day.

John Maynard Keynes, an economist of the 1920s and 1930s, was a revolutionary economist of his time. He is best known for his theories on unemployment and government spending. He supported the capitalist system like Smith, but he argued that the market left free and unregulated generates unemployment and poverty. He maintained that government spending could alleviate these inherent issues in capitalism. His ideas laid the groundwork for the New

Deal under President Franklin Roosevelt. Keynes' economics worked towards a goal – alleviating poverty through government intervention and a regulated market. This is in contrast to classical and neo-classical economics, which imagines economic growth as the goal and assumes poverty will decrease as an effect of that growth.

In contrast, Milton Friedman of the 1980s developed the basis of what is common in textbooks today. He advocated for a very limited role of government; saying the government should protect property rights and other economic 'rules of the game', but stay away from regulating markets. He had deep faith in Smith's ideas of self-interest promoting public good. So much so, that he once said, "There is one and only one social responsibility of business—to use its resources and engage in activities designed to increase its profits." Large corporations loved him.

All in all, ideas about what constitutes a market, what defines economic behavior, and even the very basic definition of economics has evolved and changed over time. However, all the above thinkers have something in common. They seek to answer the question: how can individuals and society best use their limited resources? This is the question economists today are asking themselves and the one that prompts me to write this paper. A major difference between economists of the past and present, however, is the assumptions and 'science' under which the economy works.

Foundational to current economics (and what is left out of US mainstream textbooks) was the rise of chattel slavery in the New World and the underdevelopment of West African nations during the 17<sup>th</sup> and 18<sup>th</sup> centuries. The US economy was built on the foundations of forced labor and exploitation. Plantation masters kept detailed logs tracking the productivity of each enslaved person and their depreciation as they aged.<sup>18</sup> It was a scientific, brutal, and dehumanizing system that reduced enslaved people to data points; their value came from not being human, but from

their productivity. In 1860, the economic value of enslaved people exceeded the combined value of all railroads, banks, and factories in the United States, again showing the extent to which US depended on enslaved people.<sup>19</sup> The willingness of white US citizens to subject Black and Brown Americans to chattel slavery was motivated by racist and economic arguments that worked hand-in-hand. The labor provided by enslaved people was seen as so integral to the economy by slavers that without it, many believed the South would cease to exist.<sup>20</sup> While the formal institution of slavery was dismantled, the desire for low-wage labor and maximum efficiency – regardless of the well-being of the labors – was not. Through first slavery, then sharecropping and low-wage manufacturing, the US was able to rise to global economic prominence and become a global leader in the post-WWII negotiations.<sup>21</sup> The post-WWII time period was critical, as it created the foundations of the global economic system that has changed relatively little over the past 70 years. With the US as a political and economic leader due to racial capitalism, key allied powers convened at a meeting that would change the world: the Bretton Woods Convention.

At the end of WWII, the allied powers sought to intentionally remake the world economic order. At the Bretton Woods Convention, they created three global political and economic institutions: the GATT (today known as the World Trade Organization), World Bank, and IMF. All these institutions have their separate critiques and issues, but they all share a connection to replicating the economic power structures of their time. In the 1940s, the economic and industrial “rise” of the west that was built through colonialism and slavery was deeply embedded in the Global North.<sup>22</sup> As the USSR gained influence and power, western powers like the United States increasingly saw communism and socialism as the greatest threats to their society and sought to secure the western way of life at home and abroad. Thus, the WTO, World



Bank, and IMF were formed to increase US and Global North economic power and replicate capitalistic economic systems across a wider swath of geographical space. The assumptions at the time were that capitalism and democracy worked hand-in-hand, and a freer market meant more international trade, and these in turn would create international economic dependencies that would prevent future global war, help reduce global poverty, and stop the spread of communism.

There were key economists at this convention, especially John Maynard Keynes, who argued for regulated markets and an active role for governments. However, some of his ideas around creating a fair global trading system were scrapped in favor of policies that directly benefited the US.<sup>23</sup> For example, the US decided against the creation of a ‘reserve currency’ administered by a global bank that would use trade surpluses to help balance out trade deficits. Instead, American attendees opted to link the US dollar to gold; thereby making the dollar ‘as good as gold’ and effectively instituting the US dollar as the reserve currency.<sup>24</sup> This has had devastating effects on some countries’ economies, leading to debt and devaluation of their currency and confusion when the US dollar delinked from gold in the 1970s. This policy also encouraged countries to do business with the US and adopt the US methods of business, which are rooted in exploitative practices as discussed above.

Overall, these new organizations overseeing the (re)construction of the global economy were “not neutral economic mechanisms: they contained a powerful bias in favor of global competition and corporate enterprise” (Ellewood, 2009). Global competition and corporate enterprise are as American as baseball and apple pie, and especially in the 1950s, when returning soldiers wanted jobs and the US was a manufacturing power house. The US sought to sell their exports cheaply to other nations, so they created an international club of institutions that focused on cutting down trade barriers (the GATT and IMF). The dominant thinking was (and still is)

that increased growth will help alleviate poverty and eventually environmental issues. However, the paradox is that classical economic growth encourages the exploitation of laborers and resources to fuel ever-increasing economic growth.

After the new world order was created, there was a gradual shift in economics from being a goal-oriented political science to taking on the form of a 'natural science'. After all, science was seen as saving the war through the atomic bomb. As an effect, social sciences incorporated more scientific methods in hopes that objective and rational methods would lead to the truth.<sup>25</sup> While many social studies have found a balance between scientific methods and qualitative contexts, economics became more about uncovering the 'laws of economics' that were at play in society on an international and local scale than the ways in which economics can be used as a tool to improve human-welfare. Coincidentally, I argue the 'laws' economists have uncovered in most ways reflect the world economic order that was generated at Bretton Woods. For instance, global competition is encouraged and shown to do well in economic models because Bretton Woods intentionally created a system that encourages global competition and corporate enterprise. This goes to show what Keynes already knew in the 1930s - that "the economy was a human-made artifact and that people acting together through their government could have some control over its direction."<sup>26</sup> As I show later, most mainstream economic textbooks do not challenge the assumptions that grew out of the economic order created at Bretton Woods. Instead, these assumptions are naturalized as having always been there, only needing to be uncovered by economists.

Before WWII, Keynes and others challenged these common economic assumptions. The result was the New Deal economy, which lifted thousands out of poverty and created hope during the Great Depression. Nowadays, we are in an unprecedented age of climate and social

ills. This makes economics more important than ever, and yet, most economists are still acting as though we have to live under the laws of a Bretton Woods world. This is not the case. We can and must use our ingenuity to create a new economy that reflects the importance of solving the issues we face today. However, it starts with teaching future economists how to create the future they envision and encouraging them to examine the basic assumptions upon which economic theories are established.

### **Putting the Social back into Social Science**

*I don't care who writes a nation's laws, or crafts its advanced treaties, if I can write its economics textbooks.*

*- Paul A. Samuelson<sup>27</sup>*

As said before, mathematics in social sciences took off after WWII,<sup>28</sup> and economics in particular desired to become similar to a natural science.<sup>29</sup> Influential economist Milton Friedman went so far as to say economics was a positive science – meaning economics is a value-free zone where economists simply describe ‘what is’, like biology or physics.<sup>30</sup> This could not be farther from the truth. As shown through the Bretton Woods convention, the market is a dynamic arena in which we create the rules by which it runs. Like a sports game, the rules reflect the environment and goals of which the teams are playing. In neoclassical economics, however, the goal of human welfare has become hidden under layers of models and mathematical equations and replaced by an insatiable desire for GDP growth. The environment in which we play ‘the game’ of economics, aka the vibrant and diverse ecosystems in which we

live, has been replaced by a blank and void background. This is reflected in the textbooks used to introduce students to economics, despite the many economic papers that illustrate GDP growth is not correlated with increasing human welfare.<sup>3132</sup> There are loads of diverse economies – feminist, Marxist, ecological – that are not mentioned in introductory economics classes.

To begin the examination of introductory economics classes, I decided to stay close to home. I am uniquely situated in that I have been a supplement instructor (SI Leader) for both Introduction to Microeconomics and Introduction to Macroeconomics at UT Austin. An SI leader is an older student within the field of study that provides weekly study sessions to help students with the course material. I planned lesson plans based on the professor's lectures and had access to all additional class material, including the textbooks, the professor used to teach the course. To further my understanding of student experiences in learning economics, I conducted semi-structured interviews with five undergraduate students with class experience in economics and three economics professors. To begin, I'll be looking at the textbook used to introduce all UT Austin students to economics and critiquing it along the way.

The textbook used to teach economics at UT is also the most popular and widely used textbook for introductory college economics classes.<sup>33</sup> Gregory Mankiw, the author of this prolific text, estimates his textbook is used in 20-25% of the nation's collegiate introductory classes.<sup>34</sup> This means studying its text provides a solid base for understanding how a large swath of introductory collegiate economics classes are taught in the United States. It also means this textbook, written by one 63-year old white man, serves as the first impression for thousands of students into the world and mindset of mainstream economics. That is an incredible power. (Mankiw knows this too; the quote at the beginning of this section I found from his blog.) Because economics is “the mother tongue of public policy,”<sup>35</sup> it has the potential to help us

understand the looming environmental crises we face and the path from poverty to prosperity. It affects each of us, including how we interact with wealth, our careers, the environment, and each other. Therefore, the field itself must be in a constant state of self-evaluation, looking for weakness and missteps in its assumptions, and ways it overlooks people, society, or ideas. My work here is an entry into this self-evaluation.

First, I'd like to bring attention to general themes throughout the first two chapters in Mankiw's textbook. The textbook presents 'principles' or a list of assumptions from which the rest of the textbook is based; the specifics of which will be discussed below.<sup>36</sup> There's no mention of economic history or looking at these assumptions in a historical context. Additionally, it is not implied or encouraged that these assumptions be questioned. Mankiw's textbook invokes scientific-style authority with the word principle. A principle is defined by Merriam-Webster as a "comprehensive and fundamental law, doctrine, or assumption".<sup>37</sup> Reading onto chapter two of the textbook, Mankiw goes on to equate the economic mindset to a scientific one.<sup>38</sup> At the beginning of most subsections in chapter two, Mankiw makes analogies of economic systems to biology or physics.<sup>39</sup> For example, in justifying the assumptions economists make, he compares economic assumptions to the assumptions physicists make when they chose to ignore negligible friction acting on a marble. This sets up in the students mind that the things ignored by economic models, like the environment or systemic racism, are pretty much negligible in how they affect people economically. He describes "much of economics is positive: it just tries to explain how the economy works."<sup>40</sup> Again, he invokes the authority of an unbiased, dispassionate, observer that uncovers the ways in which the world operates.

However, there are differences between observing a chemical reaction and human interaction. Humans are deeply embedded in societal and environmental context. To observe

people interacting in that context, without taking it into account, is limiting at best and dangerous at worst. But let's say, just for a moment, economists were to act like scientists. Looking at our recent history, we would not be shown to be very good ones. When Galileo first came to his famous conclusion that gravity affects all objects the same, regardless of mass, it was somewhat difficult to test the theory. If you dropped a feather and a hammer at the same time, the hammer would reach the ground sooner than the feather. This is due to the invisible forces of air resistance that keep the feather in the air longer. It wasn't until 1971, when the astronaut David Scott conducted a famous demonstrational experiment of the feather and the hammer on the moon, that the visualization of Galileo's experiment could be fully realized.<sup>41</sup> He released both objects from the same height at the same time and both struck the lunar surface simultaneously. The context Scott conducted his experiment - aka the moon - naturally showed different results than if that experiment was conducted on earth. The law of gravity was true in both places, but other factors acting on the objects on earth produced different outcomes. If economists were scientists, they would be like scientists insisting that feathers and hammers fall in the same way on the earth and the moon. They would ignore the context in which the feather and hammer were placed, just like when economists assume that the 'law of supply and demand' works generally the same for any person, group, or nation, regardless of the cultural, historical, or environmental context.

Additionally, economic 'laws' are not really laws at all. They are more like casual trends, developed by what economists see in their context rather than a universal force that applies to every being the same way. The 'law' of supply and demand does not explain the Utu-Ubuntu business model in Nairobi that assumes "the main reason for [wealth] accumulation and deployment of surplus is to help families and communities thrive."<sup>42</sup> This is a far cry from the

individualistic self-interest that supposedly motivates human behavior in mainstream economic models.

When I refer to mainstream economics, I am speaking of the neoclassical economic tradition in which “markets are moved by an invisible hand and all actors are rational.” The ideas of perfect rationality and utility maximization – two characteristics which make up the neoclassical homo economicus (translated to ‘economic man’)— came to full realization in the 20<sup>th</sup> century.<sup>43</sup> These ideas distorted human behavior to become “god-like in its’ proportions”, gifting the homo economicus with omnipotent knowledge and hyper rationality.<sup>44</sup> The reasons for this cartoonish characterization of human behavior is that the homo economicus behaves better in mathematical models than real human beings, and therefore is better for the scientific methods needed to find mathematical, economic, truth. Most economists, like the professors I interviewed, will readily admit that the homo economicus is an exaggeration of human behavior. But, they believed it is just an exaggeration, not a misrepresentation, of foundational human behavior.

### **Mankiw’s 10 Principles**

<b>Principle</b>	<b>Brief Description</b>
Principle 1: People Face Trade-Offs	People face choices between options, and sometimes these choices are exclusionary. You can’t “have it all” in all circumstances.

<p>Principle 2: The Cost of Something Is What You Give Up to Get It</p>	<p>There is an ‘opportunity cost’ to all choices. The true cost of decision is also the benefit of the second-best option someone chooses to give up. A classic example is someone choosing to go to college, and giving up four years of earning money through a full-time job.</p>
<p>Principle 3: Rational People Think at the Margin</p>	<p>People make decisions that are rational, and “at the margin,” meaning that people make decisions incrementally. For a rational person to choose an option, the marginal benefit must exceed the marginal cost.</p>
<p>Principle 4: People Respond to Incentives</p>	<p>People will respond to changes in prices and price incentives. Incentives can be punishments (fines) or rewards (salary bonus).</p>
<p>Principle 5: Trade Can Make Everyone Better Off</p>	<p>Comparative advantage is the idea that one person, company, or nation can produce a good more efficiently (with less cost) than another person, company or nation. If everyone specializes in producing what they are most efficient at, then they can trade and make each other better off.</p>
<p>Principle 6: Markets Are Usually a Good Way to Organize Economic Activity</p>	<p>People’s individual self-interest makes society as a whole better off. The textbook says “market economies have proven remarkably successful in</p>



	organizing economic activity to promote overall prosperity.”
Principle 7: Governments Can Sometimes Improve Market Outcomes	The government’s most important contribution to the market is “to enforce property rights”. The market also needs the government to correct market failures. The market rewards those that work hard and are talented, but it does not ensure everyone has access to clothing or adequate healthcare. “Depending on one’s political philosophy” this may call for government intervention.
Principle 8: A Country’s Standard of Living Depends on Its Ability to Produce Goods and Services	“Almost all variation in living standards is attributable to differences in countries’ productivity”. In other words, producing more goods and services will lead to a better standard of living and a better life.
Principle 9: Prices Rise When the Government Prints Too Much Money	Inflation causes the real prices (the prices of a good adjusted for inflation) to rise.
Principle 10: Society Faces a Short-Run Trade-Off between Inflation and Unemployment	Government policies, in the short run, can push unemployment and inflation in opposite directions.

**Analysis**

Mankiw says “the behavior of an economy reflects the behavior of the individuals who make up the economy”<sup>45</sup>, but despite human behavior being culturally specific, he explains his four principles as fact that can effectively be used universally. However, economists from the Global South counter these universal principles, instead grounding an understanding of economic behavior within culturally specific contexts. For example, Mary Kinjanyui’s study of markets in Nairobi finds the Utu-Ubuntu principle at play. In the Utu-Ubuntu model, “the main reason for [wealth] accumulation and deployment of surplus is to help families and communities thrive.”<sup>46</sup> This is unlike the individualistic self-interest that supposedly motivates human behavior in mainstream economic models as illustrated in Mankiw’s third principle. Utu-Ubuntu can be translated as “I am because we are” or in other words, a person is only a person through other people.<sup>47</sup> Research shows that the people in Nairobi have resisted attempts by elite to introduce monetized systems.<sup>48</sup> The culture places a high emphasis on corporation and community well-being; two factors that go against the self-interested behavior that economists suggest we (and some argue should) have. Livestock and grain surpluses are shared among some communities, as to share the risk of economic uncertainty.<sup>49</sup> This isn’t to romanticize the communities that practice the Utu-Ubuntu model, but rather to illustrate the point that self-interest economics is not always the default. This builds on the idea that economies are embedded in culturally specific contexts.

To begin the principle one section, Mankiw quotes the old adage “there ain’t no such thing as a free lunch.” But there are free lunches; a mother doesn’t expect money from her daughter when she packs her lunch, nor does a friend expect another to charge her for picking her up from her home. Or, as Kate Raworth explains, look at Wikipedia. It is the largest encyclopedia in the world and is completely crowd-sourced and completely free. If these things

sound inconsequential, imagine life without the emotional and practical help we receive from friends and family on a daily basis. These things are not 'uneconomic' but rather foundational to human behavior and therefore economics.

Mankiw goes on to describe how people must make decisions based on the resources they have available to them using the example of a student choosing whether to work an hour or study for an hour. The student cannot, in her limited time, do both during the same hour. This is a reasonable conclusion, and an important concept to understanding economics, but then Mankiw takes it a step farther to illustrate his point:

*“Important in modern society is the trade-off between a **clean environment** and a **high level of income**. Laws that require firms to reduce pollution raise the cost of producing goods and services. Because of these higher costs, the firms end up earning smaller profits, paying lower wages, charging higher prices... Thus, while pollution regulations yield a cleaner environment and the improved health that comes with it, this benefit comes at the cost of reducing the well-being of the regulated firms' owners, workers, and customers.”<sup>50</sup>*

*“Another trade-off society faces are between **efficiency** and **equality**. Efficiency means that society is getting the maximum benefits from its scarce resources... When government policies are designed, these **two goals often conflict**. Consider, for instance, policies aimed at equalizing the distribution of economic well-being. Some of these policies, such as the welfare system or unemployment insurance, try to help the members of society who are most in need. Others, such as the individual income tax, ask the*

*financially successful to contribute more than others to support the government. Though these policies achieve greater equality, they reduce efficiency. When the government redistributes income from the rich to the poor, it **reduces the reward for working hard**; as a result, people work less and produce fewer goods and services. In other words, when the government tries to cut the economic pie into more equal slices, the pie shrinks.”<sup>51</sup>*

(emphasis added)

In summary, Mankiw

- 1) Presents a trade-off between a clean environment and a high level of income.
- 2) Presents a trade-off between efficiency and equality.

Framed as a trade-off, it appears society must choose one over the other. But research indicates that this is a false dilemma. Even using classical economic measures like GDP, Germany has decoupled traditional economic growth from greenhouse gas (GHG) emissions.<sup>52</sup> The idea that economic growth, even by traditional standards, must be traded for a clean environment, and vice versa, is simply not true.

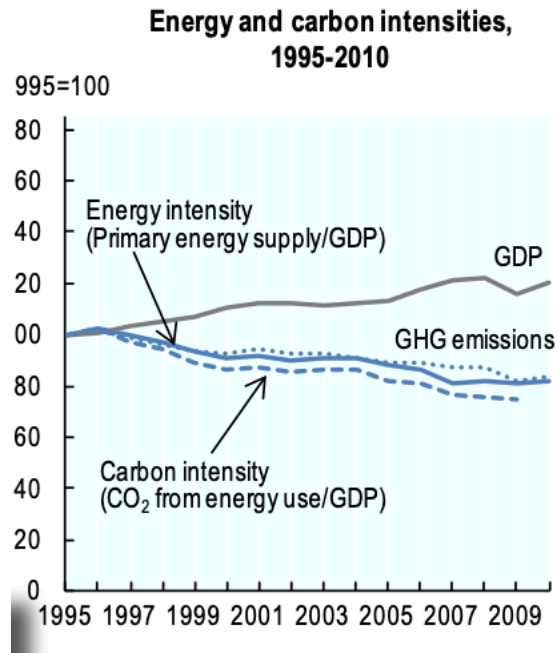


Figure 1: OECD Report

While each country is unique in terms of societal, environmental, and cultural resources that influence how a country can decrease GHG emissions, since 2000, more than 20 countries have had some level of economic growth while simultaneously decreasing GHG emissions.<sup>53</sup>

The argument that the economy and the environment must battle it out is wrong, and yet seductive in its simplicity. The framing as a “trade-off” between two distinct and independent choices hides the power dynamics and relationalities at play. For example, not everyone experiences the ill effects of pollution in the same way. Studies show that air pollution perpetuates inequalities in income.<sup>54</sup> When taking into account air pollution and household income, the bottom 20% of households lose roughly 10% of their income while the top 20% of households gain 10% due to health care expenditures and decreased quality of life.<sup>55</sup> Thus, those who are disadvantaged by pollution tend to be poorer (and due to racial capitalism, blacker), while wealthier and whiter individuals in the US pollute more but suffer less.<sup>56</sup>

By making it appear as though environmental pollution and regulations affect everyone equally Mankiw ignores the vast historical inequities that shape the present-day circumstances of low-income communities and communities of color. Cancer Alley, an industrial corridor in Louisiana, underscores this point. The swath of land is responsible for the production of 25% of the nation's petrochemical production.<sup>57</sup> Petrochemical factories produce cariogenic air pollutants, and as a result, cancer rates in Cancer Alley are "significantly higher" than rates in the rest of Louisiana and the United States.<sup>58</sup> These factories are located more densely in majority black communities and communities with high poverty rates<sup>59</sup> to such an extent that the UN condemned the US for the environmental racism in Cancer Alley.<sup>60</sup> More attention has been paid to these areas, particularly the St. James Parish, due to the success of local environmental justice organizations that stopped the building of the Formosa Plastic plant, which would have been one of the largest in the region.<sup>61</sup> These successes are to be celebrated, but the community still faces higher rates of cariogenic pollutants than most due to the industrial plants that are present.

This is not to say that there aren't people who would suffer financially because of environmental regulations – that is true. However, there are solutions in the form of job retraining programs and other policies to justly transition an economy to one that protects the health of its people. The OECD found that renewable energy, specifically solar PV, employs more people per unit of investment and energy than fossil fuel generation.<sup>62</sup> Other industries like ecosystem restoration already provide USD 9.5 billion in traditionally-measured economic output.<sup>63</sup> There are skill gaps between renewable jobs and our current labor force, but by unleashing the potential of job training programs that gap can shrink.

Furthermore, middle and lower-class Americans are already seeing their income decline.<sup>64</sup> The wealth gap is continuing to grow, and by setting up a simple trade-off between the

environment and the economy and between efficiency and equality, Mankiw hides the factors that are continuing to make our society more unequal and more dangerous for the poor to live. People are already suffering, and disproportionately lower class and people of color, from environmental degradation.

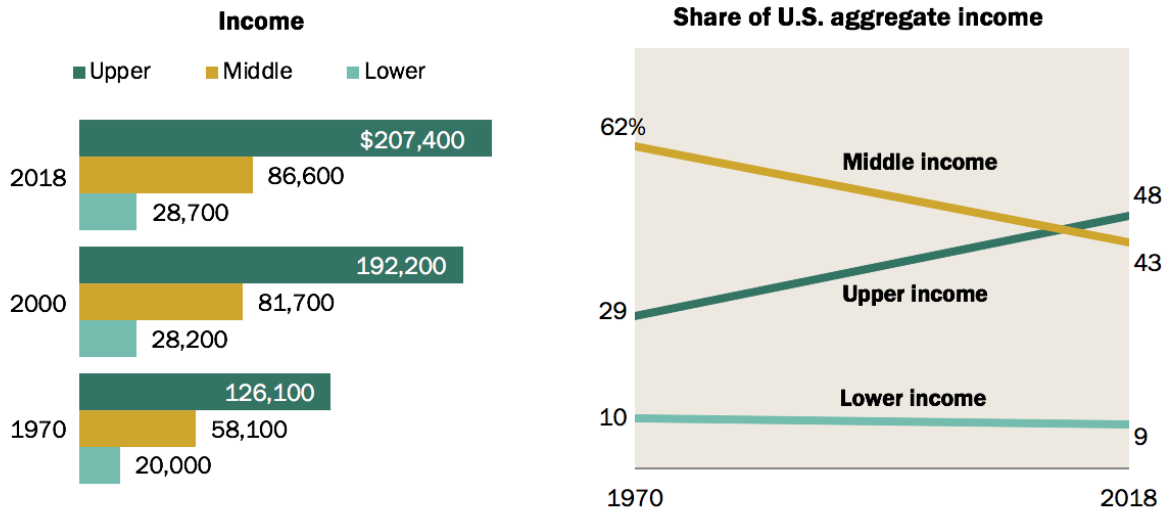
Capitalism in the United States has been described as “low-road capitalism”<sup>65</sup> due to the ways our capitalism “goes low; wages are depressed as businesses compete over the price, not the quality of goods; so-called unskilled workers are typically incentivized through punishments, not promotions; inequality reigns and poverty spreads.”<sup>66</sup> This began in slavery and was revitalized in the decline of unionization in the United States. It is still present in the systemic racism that plagues our nation’s education, health care, and environmental systems. Capitalism in the United States is uniquely unequal compared to other OECD countries.<sup>67</sup> The top 1% income earners in the US receive about 40% of US national income, and there are higher rates of poverty among the working age population than any other OECD country.<sup>68</sup> The Pew Research

Center has shown that wealth inequality has only increased since the 1980s as the middle-class shrinks.<sup>69</sup>

---

## The gaps in income between upper-income and middle- and lower-income households are rising, and the share held by middle-income households is falling

*Median household income, in 2018 dollars, and share of U.S. aggregate household income, by income tier*



Note: Households are assigned to income tiers based on their size-adjusted income. Incomes are scaled to reflect a three-person household. Revisions to the Current Population Survey affect the comparison of income data from 2014 onwards. See Methodology for details. Source: Pew Research Center analysis of the Current Population Survey, Annual Social and Economic Supplements (IPUMS). "Most Americans Say There Is Too Much Economic Inequality in the U.S., but Fewer Than Half Call It a Top Priority"

**PEW RESEARCH CENTER**

---

Figure 2: Data and graphs from Pew Research Center

These figures show a bleaker picture when race and gender are taken into account. Black households have significantly less wealth than white households, even if they have similar income levels, due to racist housing policies of the 20<sup>th</sup> century and additional systemic racism factors, like underfunded education.<sup>70</sup> Since the 1970s, women have made significant strides in closing the gender pay gap at most income levels despite growing wealth inequality.<sup>71</sup> However, they still face discrimination in the workplace and the gender pay gap still exists.<sup>72</sup> Many papers have been written as to why the gender pay gap exists. Common arguments include a combination of individual factors – like women choosing to work less, completing more



household duties, and valuing time-off more than men – and discriminatory factors like occupational discrimination, wage discrimination, and the “motherhood penalty”.<sup>73</sup> Some statistical data shows women to work less holidays and less overtime than their male counterparts.<sup>74</sup> A surface level reading of this information can cause someone to conclude women’s choices contribute to the gender pay gap, but there’s more to the story. Studies show connection to family is essential for development and health in children.<sup>75</sup> Yet, mainstream economics does not take these benefits into account – it treats these effects as negligible in economic decision making and puts mothers and fathers into a difficult decision, especially fathers and mothers that cannot afford to take time off. If we are to promote human welfare, we need to take a closer look at how our economic system can be used to benefit communities, instead of inadvertently punishing those that seek to develop deeper friends and family connections in the name of productivity.

Principle three of Mankiw’s, which introduces rational decision making, makes fundamental assumptions about people’s values. While he doesn’t call the homo economicus by name, his representation of rational people gives us the same picture. The homo economicus – literally translated as the economic man – is a common figure in economics. He is used as the model of and for human behavior.<sup>76</sup> I use ‘he’ because his ideals are associated with traditionally masculine traits – like lack of emotion – that characterize his being. The economic man is “ever calculating in his utility, and insatiable in his wants.”<sup>77</sup> He is meant to represent people in decision-making models, yet hardly resembles a person at all. The figure is beyond the messy emotions, social histories, and environmental contexts that tend to clog up modeling. There are several issues with this figure, but the one I will focus on now has significant implications for economics: underrepresentation.

Underrepresentation of women and minority students is a well-documented issue in economics.<sup>787980</sup> According to a survey by the American Economic Association done in 2016, women made up 35% of new doctorates, 28% of assistant professors, and only 12% of full professors.<sup>81</sup> In terms of Black and Hispanic inclusion, only 6.3% percent of tenured and tenure-track economics faculty identified as Black or Hispanic even though those groups make up 30% of the US population.<sup>82</sup>

The benefits of diversity are well-known<sup>83</sup> and the lack thereof in economics limits the perspectives that inform new theories and objects of study. Researchers have posed different explanations for this persistent underrepresentation. In terms of gender, these explanations range from women are inherently less interested in economics or are “not willing or able to acquire the math skills needed to do well” in the subject, to other explanations that involve institutional forces and lack of female representation that discourage women from entering the field.<sup>84</sup>

Implicit bias is a force to be reckoned with in explaining the lack of representation in economics. Katherine Milkman, Modupe Akinola and Dolly Chungh in a 2015 study sent out a request to 6,500 professors across 89 disciplines from a fictional prospective student asking for a 10-minute meeting to discuss research opportunities prior to applying to a doctoral program. They randomly assigned the student’s name to indicate race and gender. Overall, the study found white men received more responses than any other category of student but particularly in business, where 87% of white males received a response compared to only 62% of women and minorities.<sup>85</sup> In the social sciences, which grouped economics with 18 other disciplines including sociology, gender-studies, and communication, 75% of white males received a response compared with 68% of women and minorities. These disparities create an informal barrier for women and minorities proceeding into an economics career and raises questions about what

other implicit biases perpetuate underrepresentation. I suggest here one of mainstream economics' most cherished characters, homo economics, presents an additional implicit bias barrier that discourages women and minorities from entering the field.

Like said before, the homo economicus is self-interested, always rational, and makes every decision based on a strict cost-benefit analysis. Kate Raworth in her book *Doughnut Economics* details the history of the economic man, beginning in 1844 when John Staurt Mill in his own words created “an arbitrary man” that was “only true in the abstract”<sup>86</sup>, but was endowed with an exaggerated deep dislike for work and a love of luxury. The economic man then became god-like in his knowledge by economist Frank Knight in the 1920s, who gifted the economic man with perfect knowledge and perfect foresight.<sup>87</sup> Thus, the economic man became even easier to work with in mathematical modeling. This achievement opened new realms of modeling that previously had been closed, but at the cost of reality. The economic man's portrait is now unrecognizable as human and the assumptions made him are too great to be considered an accurate model of human behavior.

There is another characteristic of the economic man – his whiteness – that affects his work. In mainstream economics models, the economic man does not face discrimination. In this regard, we may say that mainstream economics inadvertently sides with racial oppression by perpetuating theories that disadvantage the poor. John Komlos in his essay *Covert Racism in Economics* details the market fundamentalism that has the unintended consequence of “providing ample justification for maintain the status quo which privileges the well-to-do but finds most minorities at the lower end of the social-economic hierarchy.”<sup>88</sup> The economic man's whiteness might not be inherently malicious, but researcher Jayme Walenta links the decisions made by the leaders of the corrupted Enron corporation with “white hegemonic masculinity that is toxic in its

effects”<sup>89</sup>. She describes that Enron executives justified their loose care for other people’s fortunes by using the economic man as a means to justify the fraudulent pursuit of profit. This shows a case of life imitating economic theory in the form of the economic man. By crafting the economic man as existing outside social systems, the field of economics created a being that does not fit the lived experiences of many people in the US and excludes historically underrepresented groups from economic models. His rationality and willful ignorance to others not like him (given that the model is assumed to represent all people) makes his characteristics inaccurate for the field of economics.

Out of my five student interviews, all students (2) from minority backgrounds expressed feelings of economics was ‘not for them.’ Three of the students I interviewed were women, and two of them felt similarly or that economics didn’t make sense to them (double-counting one minority woman in this group). Additionally, in a 1995 study by Karen Dynan and Cecilia Rouse on lack of female representation, they found that women at Harvard were over twice as likely as men to respond that they “did not think that economics was interesting.”<sup>90</sup> I argue that economics ‘doesn’t make sense’ to them or is uninteresting *not* because of an inherent inability to grasp the content, but because the model of homo economicus narrowly captures the experiences of a mere few (namely white and male) people. As shown in the implicit bias study, there are a multitude of ways that discrimination affects student lives. In terms of economics, one underrepresented student I interviewed summed up his disinterest by saying “It was not the way I wanted to see the world.” Many people of all ethnicities and genders might feel the same way as the student, but there are trends to suggest homo economicus discourages underrepresented students from pursuing economics and thus limits the field as a whole.

The field of economics has been built on a rational man that is inherently exclusionary and speaks about issues that people care about, such as climate change, social justice, or the arts, only in a way that connects to hyper-rationality, if at all. Many of these things carry deeper emotion than the economic man caricature is capable of feeling, and yet, economics is deeply influential in each of these policy areas. Since economics is “the mother tongue of public policy”<sup>91</sup>, often these issues are forced to speak the language of mainstream economics in order to be heard. Next, I will explore the consequences of speaking this language for environmentalism.

### **Ecologists’ Desperation: the rise of ecosystem services**

In Jessica Dempsey’s 2016 book, *Enterprising Nature*, she sets the stage for the marriage of the market and environmentalism. It started with scientists, conservationists, and bureaucrats desperate to stop the decline of biodiversity, but frustrated with inaction or inadequate action on the issue.<sup>92</sup> And so the new era of ecosystem services began: one where nature is counted into the economic process by scientifically quantifying the amount of goods and services it naturally produces for human benefit.

On paper, it’s a mainstream economist’s dream. The problem is not with capitalism, but that nonhuman nature isn’t being properly counted into economic externalities. If ecosystem services are only accounted for accurately, then the market can take it’s ‘natural’ course. People will recognize the economic benefits of ecosystems and payments for those services will prevent their destruction. One of the economic professors I interviewed for this paper cares about the environment and expressed this exact view – saying that we must correctly measure ecosystem

services and apply scientific measures to know true cost of pollution. The market for carbon emissions or preservation of trees will prevent Earth's demise. Biodiversity will be saved.

For the ecologists and bureaucratic-scientists that wanted to stem the loss of biodiversity, the turn to economics created mixed emotions; some met the idea with enthusiasm while others reluctantly accepted the idea. Dempsey interviewed several people committed to this cause, but most of their feelings can be summed up in words of one jaded Canadian bureaucrat scientist that claimed "biodiversity...must be made relevant to the Ministry of Finance for it to survive."<sup>93</sup> There became a need for nature to be economically rational, even profitable, so that it can "compete not only in the marketplace but also in modern state governance."<sup>94</sup> Nonhuman nature must show that it can survive economically to survive physically.

However, the turn to ecosystem services has not done much to prevent biodiversity loss like its proponents had hoped.<sup>95</sup> This is not due to inaction on the issue; on the contrary, Dempsey points out that at almost every policy level from local, national, to international, policies designed to prevent biodiversity loss had been created and carried out. But, biodiversity is still declining.<sup>96</sup> There are similar trends in greenhouse gas emissions (GHGs). Even with high profile international agreements like the Kyoto agreement, the Paris Climate Accords, and the EU Cap and Trade system, carbon emissions are still above where scientists say they need to be to slow down the climate crisis.<sup>97</sup> While the EU Cap and Trade system did reduce carbon emissions in the EU, it was only about half of what the EU promised to reduce in the Kyoto protocol.<sup>98</sup> Additionally, the Kyoto protocol (a famously market-based agreement) had "disappointing emissions target" that were deemed too low from the beginning.<sup>99</sup>

Dempsey points out several reasons marketing ecosystem services has failed to work and is inherently problematic: 1) the difficulty of calculating ecological services, 2) the loss of life that isn't 'profitable' enough to make the cut, and 3) ecological simplification. Dempsey writes:

*“Ecology is a field known for increasing scientific understanding of the immense complexity of environmental processes. For the past several decades, however, ecologists and conservationists have tried to bring complexity and uncertainty into the sights of liberal institutions. In return, these institutions demand further and further simplification; ecologists are asked again and again to reduce the complexities in their models, to make their findings more straightforward and legible to governance.”<sup>100</sup>*

Just like the human portrait was cut down to the homo economicus for mathematical modeling, mainstream economists are calling for simplification of complex ecosystems so that the modeling can be smoother. Again, this raises questions of who gets to decide what ecosystems are valuable, and from where. The modeling ignores power structures and sacrifices significant realities for the sake of simplicity, and the results lead to misconstructions like the economic man. In the case of biodiversity, it leads to a persistent loss of life.

While the economic benefits of biodiversity exist but are hard to quantify, it might not even be necessary to try. A key position Dempsey takes is that “this earth simply *is* a better place with more color, more kinds of lives, and more ways of living and living with nonhumans.”<sup>101</sup> This is the position I also take in this article. Instead of taking an austerity approach to biodiversity, we can look for ways to increase its abundance within our economy. Biodiversity loss is similar and interconnected to other large-scale environmental issues – like climate change

– that have been altered to be relevant to mainstream economics. And in doing so, we sacrifice nonhuman life that isn't profitable, and the people and cultures that are at risk to being displaced by climate change (like the Marshall Islands).

Many of the people advocating for market-based biodiversity protection are well-meaning, but their faith in a neutral and objective market that is backed by equally 'neutral' scientific calculations have serious negative implications for nonhuman nature. As Dempsey points out, seeing nature in only economic terms often devalues nature itself – the opposite of what ecosystem service proponents hope to create. The big pressing issues of today – like biodiversity loss and climate change – are complex. They involve many actors (governments, individuals, corporations) and sources (farmers, businesspeople, you, me) that contribute to the problem, but all these actors/sources require certain needs to be met (food, commerce, joy, community) in ways that can put strains on the environment. This requires a new economic system that reflects the complexity of our reality.

### **Conclusion of Analysis**

One might argue that these critiques are important, but too complex or too much information for an introductory economics course. The professor I interviewed who teaches introductory economics at UT Austin made that exact point, saying “there's so much you have to get to first” before you can explore externalities. However, based on my research, I've identified three key reasons why environmental and societal factors need to be placed at the heart of the study and practice of economics:

1. The environment and social context are foundational to how people interact.
2. Economics is a goal-oriented social science.



3. When we learn something new, the foundations are what we learn stick with us.

First, environmental and social aspects of a community are main characters in the economy; not the villains hindering economic progress nor even supporting roles. During an interview with a student, the contrast between the mainstream economics perspective and real-world experiences was a critical theme. Earlier in the day I was in conversation with one of the economics professors at UT, and when I asked her about environmentalism in economics, she said that environmentalism is important, but can't be taught in an introductory class and should be reserved for the optional upper-division economic classes (though in some cases, these classes do not exist). She said people in developing nations are more worried about feeding their children and generating enough income than about environmental issues. Later in the day, I interviewed a student whose family is from Pakistan. Pakistan is the fifth most climate vulnerable nation in the world.<sup>102</sup> According to the Global Climate Risk Index, since 1998 Pakistan has lost almost 10,000 lives due to climate-related disasters.<sup>103</sup> In 2020 alone, unprecedented flooding submerged markets and warehouses in Pakistan's capital, Karachi, costing the country an estimated \$150 million US dollars.<sup>104</sup> Pakistan's agriculture sector, which is the backbone of the country's economy, is at risk from a multitude of climate change threats like rising temperatures, increased drought, and higher rates of flooding.<sup>105</sup> This is a very different lived reality than the economic theories that cast environmentalism as unimportant or even a hindrance to economic growth. It's no wonder that when this student took an introductory economics class his experience "left a bad taste in [his] mouth" and that "it felt like bologna; like BS".

There are multiple factors that contribute to Pakistan's current climate situation: global warming, colonialism, and neocolonial IMF policies<sup>106</sup>, to name a few. These factors and characteristics are not taken into account in mainstream economics classes and yet they shape the economy at its very foundation. As discussed above, humans are not strictly rational economic men. We are dynamic individuals that shape and react, that make decisions grounded in geo-cultural specificities like social norms, history, family dynamics, spatial constraints. These cultural specificities shape how people interact with each other in significant ways. The 'one-model fits all' economics of mainstream thought fails to account for the diversity of cultures and environments that make each economy notably unique.

Secondly, economics is not a positive science like biology or physics. As discussed earlier, the concept of economics has shifted over time and space, and only recently emerged as a 'positive' science. The danger of teaching economics *only* as a positive science is that it gives student a one-sided, singular world view on the 'why' behind economic phenomena. And this worldview lacks a wider complex picture of racial histories, wealth inequalities, and environmental resources. If this worldview dominates, we naturalize the power imbalances and systemic racism present in our current world system. As shown by the Bretton Woods Convention, economic systems are created and can be intentionally used to accomplish a purpose. In most other disciplines, there is a debate over what that purpose should be and the policies used to attain that goal. My point is that introductory classes, taught as they presently are, are too focused on teaching formulas that calculate human behavior or model firm decisions to bring this discussion to students. It takes away power from students and internalizes the implicitly stated goals of growing GDP as the solution to poverty and environmental degradation.

Lastly, when humans learn something new, neuropathways are carved out in the brain like roads that link thoughts from one to the next.<sup>107</sup> Roughly 40% of US undergraduate students complete at least one economics course.<sup>108109</sup> However, research indicates only 2-3% of these students major in economics.<sup>110</sup> When economic and business students are told throughout their first year of training that self-interest promotes the welfare of society, that humans behave like homo economicus (and those who do not are not rational), and that the market operates efficiently, these concepts become ingrained in students' mind and become harder to retrain. Students are told the economy is composed strictly of firms and households, not the environment or communities in which they live, and that they are powerless to shape how the economy interacts with them. We need to empower economics students, who are future policy advisors, leaders, and business counselors, to think of the economy they would like to create. They need to use their personal experiences, lessons in racial history, and understanding of the environmental issues we face to create an environmentally sustainable and socially just future. This is the path forward taken by a host of scholars and theories billed as diverse economies. I turn to their contributions now, considering what a more diverse perspective on economics can offer a lively and just environmental future.

### **So, What Should We Do?**

There are solutions to this problem, and they start with new voices in introductory courses. Instead of having the homo economicus at the heart of economics, Kate Raworth has the idea of showing people as they are: diverse in age, ethnicity, religion, and gender. This brings color, life, and vibrancy to people that economics is sorely lacking and represents the reality of life on our planet. This makes mathematical modeling more difficult, but its' time to take a break

from trying to make people fit into models and instead, if we chose to use a model, make sure it is conformed to fit real people. Raworth's idea of Doughnut Economics along with other alternative economies – like Marxist, feminist, abolitionist, and ecological – can be used in introductory courses to expand the economic discipline.

The doughnut model of economics seeks to “meet the needs of all within the means of the planet.”<sup>11</sup> By making this framework the center of economics, we begin the study of economics with different questions: What are the needs of people in my community? How can we meet these needs while staying within the means of our planet? How is my community specifically affecting the planet? These questions raise different answers than common questions brought up in introductory economics courses like ‘How can I increase and calculate GDP? Where does supply equal demand? How much dead weight loss is in this market, and why is that inefficient?’ While these are not necessarily bad things to know in themselves, as foundational questions to explore in economics they make vast assumptions about the needs of people, the functioning of society, and the abilities of our planet to sustain life. In contrast, below is a picture of the doughnut economics model.

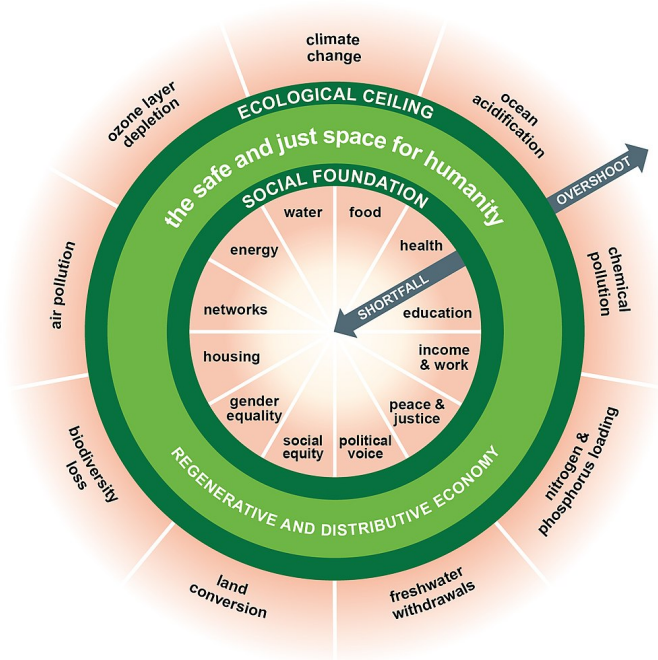


Figure 3. Doughnut Economic Model by Kate Raworth

The shape of the model resembles its' namesake. The outer ring represents the planetary thresholds that bind society within certain limits, like greenhouse gas emissions or freshwater withdrawals. The inner ring symbolizes the social foundation made up of human rights like food, health, and social equity. In today's world, we are overshooting several of our planetary boundaries – CO2 emissions and biodiversity loss, for example – and everyone's human rights are being met. But with this framework, we can actively work to get humanity inside the doughnut and therefore into a safe and just place. Some may critique the doughnut for the inside ring foundations being too vague (for example, what counts as 'peace and justice'). However, this vagueness allows the doughnut to be adapted for specific community needs. Cultural context causes the doughnut to look different in various spaces. For example, Amsterdam in February of this year became the first city to adopt doughnut economics as its foundation for city planning.

By assessing the city through the doughnut lens, they found one of the areas they were falling below the social foundation was in clean and accessible water. Now, they are implementing plans to resolve that issue that is specific to their local context. The doughnut is not meant to be a ‘one-size-fits-all’ model for economic prosperity, but rather an adaptable framework in which communities can use to fit their specific needs. So, local communities are left to determine their definitions of ‘peace and justice’ and identify pathways to achieve it.

The Doughnut Economics Action Lab (DEAL) is turning theory into action by hosting coalitions meet-ups in London, co-creating methods to downscale the doughnut with Global South members, and equipping cities with the tools to apply the doughnut in their context. Since the doughnut is a relatively new idea – Raworth’s paper came out in 2012 and her book on the subject in 2017 – we have not been able to see the long-term results of adapting the doughnut economic structure yet. However, Amsterdam will be an interesting city to watch as they make the doughnut their framework for post-COVID-19 recovery.

There are a host of other alternative economies – feminist, abolitionist, Marxist and ecological – that continue to complicate mainstream economic narratives. According to the *Journal of Feminist Economics*, feminist economics seeks to enlarge economic discourse and “improve the conditions of living for all children, women, and men.”<sup>112</sup> By establishing a clear goal for economic study, feminist economics steers the field away from a ‘positive science’ approach. The paper topics featured in the journal range in focus and methodology, but are united through their mission to bring gendered issues and diverse voices to the surface. Again, complicating mainstream economics by intentionally bringing in voices and types of labor that are often left out of traditional discussion.

Abolitionist economists look at the economy with racism, slavery, and force being the primary developers of modern day capitalism. These activists and scholars look at where slavery still exists today – in the US prison-labor system – and analyze the economy of police, fines, and prisons. They focus on redirecting resources away from prisons and police and towards BIPOC communities. Again, these scholars disrupt mainstream economic theory that asserts only individual's talent and comparative advantage determine economic success by taking into account the brutality of racialized global capitalism. (For more information, I recommend Jackie Wang's book *Carceral Capitalism*).

Marxist economists revitalize the ideas of Karl Marx, while critiquing them and shaping them for today's world. These economists focus on the unequal power relations between capitalists and workers, and was developed out of Marx's criticism of Adam Smith's classical approach to wages and productivity (all the way back in the 19<sup>th</sup> century! Critiques of capitalism are not new.)

Lastly, ecological economics is described by one journal as “an interdisciplinary field defined by a set of concrete problems or challenges related to governing economic activity in a way that promotes human well-being, sustainability, and justice.”<sup>113</sup> This disrupts mainstream economics by providing a clear goal focused on human-welfare and recognizing our dependency on the planet.

All these ideas are fundamentally interdisciplinary and interconnected. They complicate mainstream economics narratives by setting new goals, moving away from a positive science approach, and bringing in diverse voices to better represent economic reality. Mainstream economics has created a gap between theory and lived actuality for many people, which causes

underrepresentation in economics and creates misguided solutions for pressing issues like climate change and social justice.

### **Conclusion**

There is a plethora of economic work that desires to make the world environmentally safe, socially just, and make economics a more accurate reflection of society. Despite the abundance of such work, it has not been introduced into undergraduate economics classes. This takes power away from students and replicates issues in mainstream economics of underrepresentation, narrow modeling, and inaccurate assumptions about what creates human well-being. If we reshape the definition of the economy to fit the needs of today, as has been done for thousands of years, we can create a future built on the ways we wish to see the world. Remaking that definition starts with what is defined as 'economic'. The economy is not just firms and households. It is the ecosystems that shape us and the power imbalances that shape our world. It is a goal-oriented social science that is affected by local context and histories; and it is not an objective positive science. Alternative economies bring these things to attention and empowers students to think of new ways about the institutionalized ideas about the environment and the economy. These in turn can be adapted to think of innovative solutions to climate change that operate with an indifference to economic growth and prioritize social justice.



- 
- <sup>1</sup> Ballew, Matthew, et al. Yale Program on Climate Change Communication, 2019, *Americans Underestimate How Many Others in the U.S. Think Global Warming Is Happening*.
- <sup>2</sup> Mankiw, N. Gregory, et al. *Principles of Macroeconomics*. 9th ed., Cengage, 2021.
- <sup>3</sup> Mitchell, Stacy. "Monopoly Power and the Decline of Small Business." *Institute for Local Self-Reliance*, 2016, [ilsr.org/wp-content/uploads/2018/03/MonopolyPower-SmallBusiness.pdf](https://ilsr.org/wp-content/uploads/2018/03/MonopolyPower-SmallBusiness.pdf).
- <sup>4</sup> Raworth, Kate. *Doughnut Economics: Seven Ways to Think like a 21st-Century Economist*. Chelsea Green, 2018.
- <sup>5</sup> Sherman, Howard J., et al. *Economics: an Introduction to Traditional and Progressive Views*, 7th ed., Routledge, 2008.
- <sup>6</sup> Sherman, Howard J., et al. *Economics: an Introduction to Traditional and Progressive Views*, 7th ed., Routledge, 2008.
- <sup>7</sup> Raworth, Kate. *Doughnut Economics: Seven Ways to Think like a 21st-Century Economist*. Chelsea Green, 2018.
- <sup>8</sup> Raworth, Kate. *Doughnut Economics: Seven Ways to Think like a 21st-Century Economist*. Chelsea Green, 2018.
- <sup>9</sup> Hosseini, Hamid. "Contributions of Medieval Muslim Scholars to the History of Economics and Their Impact: A Refutation of the Schumpeterian Great Gap." *A Companion to the History of Economic Thought*, by Warren Samuels, Blackwell Publishing Ltd, 2003, pp. 28–45.
- <sup>10</sup> Hosseini, Hamid. "Contributions of Medieval Muslim Scholars to the History of Economics and Their Impact: A Refutation of the Schumpeterian Great Gap." *A Companion to the History of Economic Thought*, by Warren Samuels, Blackwell Publishing Ltd, 2003, pp. 28–45.
- <sup>11</sup> Abu-Lughod (long history of industrial revolution)
- <sup>12</sup> Hosseini, Hamid. "Contributions of Medieval Muslim Scholars to the History of Economics and Their Impact: A Refutation of the Schumpeterian Great Gap." *A Companion to the History of Economic Thought*, by Warren Samuels, Blackwell Publishing Ltd, 2003, pp. 28–45.
- <sup>13</sup> Hosseini, Hamid. "Contributions of Medieval Muslim Scholars to the History of Economics and Their Impact: A Refutation of the Schumpeterian Great Gap." *A Companion to the History of Economic Thought*, by Warren Samuels, Blackwell Publishing Ltd, 2003, pp. 28–45.
- <sup>14</sup> Hosseini, Hamid. "Contributions of Medieval Muslim Scholars to the History of Economics and Their Impact: A Refutation of the Schumpeterian Great Gap." *A Companion to the History of Economic Thought*, by Warren Samuels, Blackwell Publishing Ltd, 2003, pp. 28–45.
- <sup>15</sup> Hosseini, Hamid. "Contributions of Medieval Muslim Scholars to the History of Economics and Their Impact: A Refutation of the Schumpeterian Great Gap." *A Companion to the History of Economic Thought*, by Warren Samuels, Blackwell Publishing Ltd, 2003, pp. 28–45.
- <sup>16</sup> Raworth, Kate. *Doughnut Economics: Seven Ways to Think like a 21st-Century Economist*. Chelsea Green, 2018.

- 
- <sup>17</sup> Raworth, Kate. *Doughnut Economics: Seven Ways to Think like a 21st-Century Economist*. Chelsea Green, 2018.
- <sup>18</sup> Desmond, Matthew. "In Order to Understand the Brutality of American Capitalism, You Have to Start on the Plantation." *New York Times*, 14 Aug. 2019.
- <sup>19</sup> <https://www.nps.gov/articles/industry-and-economy-during-the-civil-war.htm>
- <sup>20</sup> Desmond, Matthew. "In Order to Understand the Brutality of American Capitalism, You Have to Start on the Plantation." *New York Times*, 14 Aug. 2019.
- <sup>21</sup> Desmond, Matthew. "In Order to Understand the Brutality of American Capitalism, You Have to Start on the Plantation." *New York Times*, 14 Aug. 2019.
- <sup>22</sup> Marks, Robert. "The Industrial Revolution and Its Consequences." *The Origins of the Modern World: A Global and Environmental Narrative from the Fifteenth to the Twenty-First Century*, by Robert Marks, 3rd ed., Rowman & Littlefield, 2015, pp. 97–126.
- <sup>23</sup> Ellwood, Wayne. "The Bretton Woods Convention." *The No-Nonsense Guide to Globalization*, by Wayne Ellwood, New Internationalist, 2001, pp. 29–45.
- <sup>24</sup> Ellwood, Wayne. "The Bretton Woods Convention." *The No-Nonsense Guide to Globalization*, by Wayne Ellwood, New Internationalist, 2001, pp. 29–45.
- <sup>25</sup> Barnes, 2000 chapter 2 titled Inventing Anglo-American Economic Geography, 1889-1960
- <sup>26</sup> Ellwood, Wayne. "The Bretton Woods Convention." *The No-Nonsense Guide to Globalization*, by Wayne Ellwood, New Internationalist, 2001, pp. 29–45.
- <sup>27</sup> Greg Mankiw's Blog: <http://gregmankiw.blogspot.com/>
- <sup>28</sup> Barnes, Trevor J. "A Companion to Economic Geography." *A Companion to Economic Geography*, by Eric Sheppard, Blackwell Publishing Ltd, 2017, pp. 9–26.
- <sup>29</sup> Raworth, Kate. *Doughnut Economics: Seven Ways to Think like a 21st-Century Economist*. Chelsea Green, 2018.
- <sup>30</sup> Raworth, Kate. *Doughnut Economics: Seven Ways to Think like a 21st-Century Economist*. Chelsea Green, 2018.
- <sup>31</sup> Kapoor, Amit, and Bibek Debroy. "GDP Is Not a Measure of Human Well-Being." *Harvard Business Review*, 2019.
- <sup>32</sup> Raworth, Kate. *Doughnut Economics: Seven Ways to Think like a 21st-Century Economist*. Chelsea Green, 2018.
- <sup>33</sup> Samuelson, Robert. "It's Time We Tear Up Our Economics Textbooks and Start Over." *The Washington Post*, 2019, [www.washingtonpost.com/opinions/its-time-we-tear-up-our-economics-textbooks-and-start-over/2019/06/23/54794ab8-9432-11e9-b570-6416efdc0803\\_story.html](http://www.washingtonpost.com/opinions/its-time-we-tear-up-our-economics-textbooks-and-start-over/2019/06/23/54794ab8-9432-11e9-b570-6416efdc0803_story.html).
- <sup>34</sup> Samuelson, Robert. "It's Time We Tear Up Our Economics Textbooks and Start Over." *The Washington Post*, 2019, [www.washingtonpost.com/opinions/its-time-we-tear-up-our-economics-textbooks-and-start-over/2019/06/23/54794ab8-9432-11e9-b570-6416efdc0803\\_story.html](http://www.washingtonpost.com/opinions/its-time-we-tear-up-our-economics-textbooks-and-start-over/2019/06/23/54794ab8-9432-11e9-b570-6416efdc0803_story.html).
- <sup>35</sup> Raworth, Kate. *Doughnut Economics: Seven Ways to Think like a 21st-Century Economist*. Chelsea Green, 2018.
- <sup>36</sup> Mankiw, N. Gregory, et al. *Principles of Macroeconomics*. 9th ed., Cengage, 2021.
- <sup>37</sup> <https://www.merriam-webster.com/dictionary/principle>
- <sup>38</sup> Mankiw, N. Gregory, et al. *Principles of Macroeconomics*. 9th ed., Cengage, 2021.
- <sup>39</sup> Mankiw, N. Gregory, et al. *Principles of Macroeconomics*. 9th ed., Cengage, 2021.
- <sup>40</sup> Mankiw, N. Gregory, et al. *Principles of Macroeconomics*. 9th ed., Cengage, 2021.

- 
- <sup>41</sup> Higgins, Chris. “Hammer and Feather Drop on the Moon.” *Mental Floss*, 2009, [www.mentalfloss.com/article/22913/hammer-and-feather-drop-moon#:~:text=In%201971%2C%20astronaut%20David%20Scott,during%20the%20Apollo%2015%20mission.&text=Well%2C%20on%20the%20moon%20there,drop%20at%20the%20same%20speed](http://www.mentalfloss.com/article/22913/hammer-and-feather-drop-moon#:~:text=In%201971%2C%20astronaut%20David%20Scott,during%20the%20Apollo%2015%20mission.&text=Well%2C%20on%20the%20moon%20there,drop%20at%20the%20same%20speed).
- <sup>42</sup> Higgins, Chris. “Hammer and Feather Drop on the Moon.” *Mental Floss*, 2009, [www.mentalfloss.com/article/22913/hammer-and-feather-drop-moon#:~:text=In%201971%2C%20astronaut%20David%20Scott,during%20the%20Apollo%2015%20mission.&text=Well%2C%20on%20the%20moon%20there,drop%20at%20the%20same%20speed](http://www.mentalfloss.com/article/22913/hammer-and-feather-drop-moon#:~:text=In%201971%2C%20astronaut%20David%20Scott,during%20the%20Apollo%2015%20mission.&text=Well%2C%20on%20the%20moon%20there,drop%20at%20the%20same%20speed).
- <sup>43</sup> Simon, Herbert A. “Bounded Rationality in Social Science: Today and Tomorrow.” *Mind & Society*, vol. 1, no. 1, 2000, pp. 25–39., doi:10.1007/bf02512227.
- <sup>44</sup> Raworth, Kate. *Doughnut Economics: Seven Ways to Think like a 21st-Century Economist*. Chelsea Green, 2018.
- <sup>45</sup> Mankiw, N. Gregory, et al. *Principles of Macroeconomics*. 9th ed., Cengage, 2021.
- <sup>46</sup> Mankiw, N. Gregory, et al. *Principles of Macroeconomics*. 9th ed., Cengage, 2021.
- <sup>47</sup> “African Philosophy: Ubuntu a Way of Life.” *AFRICAW*, 2021, [www.africaw.com/african-philosophy-ubuntu-a-way-of-life](http://www.africaw.com/african-philosophy-ubuntu-a-way-of-life).
- <sup>48</sup> Kinyanjui, Mary Njeri. *African Markets and the Utu-Buntu Business Model A Perspective on Economic Informality in Nairobi*. African Minds, 2019.
- <sup>49</sup> Kinyanjui, Mary Njeri. *African Markets and the Utu-Buntu Business Model A Perspective on Economic Informality in Nairobi*. African Minds, 2019.
- <sup>50</sup> Mankiw, N. Gregory, et al. *Principles of Macroeconomics*. 9th ed., Cengage, 2021.
- <sup>51</sup> Mankiw, N. Gregory, et al. *Principles of Macroeconomics*. 9th ed., Cengage, 2021.
- <sup>52</sup> 2012, *OECD Environmental Performance Reviews: Germany 2012*, [www.oecd.org/env/country-reviews/50418430.pdf](http://www.oecd.org/env/country-reviews/50418430.pdf).
- <sup>53</sup> Aden, Nate. “The Roads to Decoupling: 21 Countries Are Reducing Carbon Emissions While Growing GDP.” *World Resources Institute*, 5 Apr. 2016, [www.wri.org/insights/roads-decoupling-21-countries-are-reducing-carbon-emissions-while-growing-gdp](http://www.wri.org/insights/roads-decoupling-21-countries-are-reducing-carbon-emissions-while-growing-gdp).
- <sup>54</sup> Muller, Nicholas Z., et al. “The Distribution of Income Is Worse than You Think: Including Pollution Impacts into Measures of Income Inequality.” *PLOS ONE*, vol. 13, no. 3, 2018, doi:10.1371/journal.pone.0192461.
- <sup>55</sup> Muller, Nicholas Z., et al. “The Distribution of Income Is Worse than You Think: Including Pollution Impacts into Measures of Income Inequality.” *PLOS ONE*, vol. 13, no. 3, 2018, doi:10.1371/journal.pone.0192461.
- <sup>56</sup> Hajat, Anjum, et al. “Socioeconomic Disparities and Air Pollution Exposure: a Global Review.” *Current Environmental Health Reports*, vol. 2, no. 4, 2015, pp. 440–450., doi:10.1007/s40572-015-0069-5.
- <sup>57</sup> ^
- <sup>58</sup> ^
- <sup>59</sup> ^
- <sup>60</sup> Kaufman, Alexander. “UN Says Environmental Racism in Louisiana's Cancer Alley Must End.” *Grist*, 1 Apr. 2021, [grist.org/justice/united-nations-environmental-racism-cancer-alley-louisiana/](http://grist.org/justice/united-nations-environmental-racism-cancer-alley-louisiana/).

- 
- <sup>61</sup> Kaufman, Alexander. “UN Says Environmental Racism in Louisiana's Cancer Alley Must End.” *Grist*, 1 Apr. 2021, [grist.org/justice/united-nations-environmental-racism-cancer-alley-louisiana/](http://grist.org/justice/united-nations-environmental-racism-cancer-alley-louisiana/).
- <sup>62</sup> “Making the Green Recovery Work for Jobs, Income and Growth.” *OECD*, 2020, [www.oecd.org/coronavirus/policy-responses/making-the-green-recovery-work-for-jobs-income-and-growth-a505f3e7/](http://www.oecd.org/coronavirus/policy-responses/making-the-green-recovery-work-for-jobs-income-and-growth-a505f3e7/).
- <sup>63</sup> ^
- <sup>64</sup> Horowitz, Juliana Menasce, et al. “Trends in U.S. Income and Wealth Inequality.” *Pew Research Center's Social & Demographic Trends Project*, Pew Research Center, 9 Jan. 2020, [www.pewresearch.org/social-trends/2020/01/09/trends-in-income-and-wealth-inequality/](http://www.pewresearch.org/social-trends/2020/01/09/trends-in-income-and-wealth-inequality/).
- <sup>65</sup> Desmond, Matthew. “In Order to Understand the Brutality of American Capitalism, You Have to Start on the Plantation.” *New York Times*, 14 Aug. 2019.
- <sup>66</sup> Desmond, Matthew. “In Order to Understand the Brutality of American Capitalism, You Have to Start on the Plantation.” *New York Times*, 14 Aug. 2019.
- <sup>67</sup> Desmond, Matthew. “In Order to Understand the Brutality of American Capitalism, You Have to Start on the Plantation.” *New York Times*, 14 Aug. 2019.
- <sup>68</sup> Desmond, Matthew. “In Order to Understand the Brutality of American Capitalism, You Have to Start on the Plantation.” *New York Times*, 14 Aug. 2019.
- <sup>69</sup> Horowitz, Juliana Menasce, et al. “Trends in U.S. Income and Wealth Inequality.” *Pew Research Center's Social & Demographic Trends Project*, Pew Research Center, 9 Jan. 2020, [www.pewresearch.org/social-trends/2020/01/09/trends-in-income-and-wealth-inequality/](http://www.pewresearch.org/social-trends/2020/01/09/trends-in-income-and-wealth-inequality/).
- <sup>70</sup> Darity, William, et al. “What We Get Wrong About Closing The Racial Wealth Gap.” *The Samuel Dubois Cook Center on Social Equity*, 2018, [socialequity.duke.edu/wp-content/uploads/2019/10/what-we-get-wrong.pdf](http://socialequity.duke.edu/wp-content/uploads/2019/10/what-we-get-wrong.pdf).
- <sup>71</sup> Blau, Francine D., and Lawrence M. Kahn. “The Gender Pay Gap: Have Women Gone as Far as They Can?” *Academy of Management Perspectives*, vol. 21, no. 1, 2007, pp. 7–23. *JSTOR*, [www.jstor.org/stable/4166284](http://www.jstor.org/stable/4166284). Accessed 13 May 2021.
- <sup>72</sup> ^
- <sup>73</sup> Litman, Leib, et al. “The Persistence of Pay Inequality: The Gender Pay Gap in an Anonymous Online Labor Market.” *PLOS ONE*, vol. 15, no. 2, 2020, doi:10.1371/journal.pone.0229383.
- <sup>74</sup> ^
- <sup>75</sup> Morris, Amanda Sheffield, et al. “The Role of the Family Context in the Development of Emotion Regulation.” *Social Development*, vol. 16, no. 2, 2007, pp. 361–388., doi:10.1111/j.1467-9507.2007.00389.x.
- <sup>76</sup> “Nurture Human Nature.” *Doughnut Economics: Seven Ways to Think like a 21st-Century Economist*, by Kate Rawroth, Chelsea Green, 2017, pp. 81–110.
- <sup>77</sup> “Nurture Human Nature.” *Doughnut Economics: Seven Ways to Think like a 21st-Century Economist*, by Kate Rawroth, Chelsea Green, 2017, pp. 81–110.
- <sup>78</sup> Bayer, Amanda, and Cecilia Elena Rouse. “Diversity in the Economics Profession: A New Attack on an Old Problem.” *Journal of Economic Perspectives*, vol. 30, no. 4, 2016, pp. 221–242., doi:10.1257/jep.30.4.221.

- 
- <sup>79</sup> Dynan, Karen E., and Cecilia Elena Rouse. “The Underrepresentation of Women in Economics: A Study of Undergraduate Economics Students.” *The Journal of Economic Education*, vol. 28, no. 4, 1997, pp. 350–368., doi:10.1080/00220489709597939.
- <sup>80</sup> “Committee on the Status of Minority Groups in the Economics Profession (CSMGEP).” *American Economic Review*, vol. 105, no. 5, 2015, pp. 762–774., doi:10.1257/aer.15000021.
- <sup>81</sup> “Committee on the Status of Women in the Economics Profession.” *American Economic Review*, vol. 104, no. 5, 2014, pp. 664–681., doi:10.1257/aer.104.5.664.
- <sup>82</sup> Bayer, Amanda, and Cecilia Elena Rouse. “Diversity in the Economics Profession: A New Attack on an Old Problem.” *Journal of Economic Perspectives*, vol. 30, no. 4, 2016, pp. 221–242., doi:10.1257/jep.30.4.221.
- <sup>83</sup> ^
- <sup>84</sup> Dynan, Karen, and Cecilia Elena Rouse. “The Underrepresentation of Women in Economics: A Study of Undergraduate Economics Students.” *National Bureau of Economic Research*, 1995, doi:10.3386/w5299.
- <sup>85</sup> Milkman, Katherine L., et al. “What Happens before? A Field Experiment Exploring How Pay and Representation Differentially Shape Bias on the Pathway into Organizations.” *Journal of Applied Psychology*, vol. 100, no. 6, 2015, pp. 1678–1712., doi:10.1037/apl0000022.
- <sup>86</sup> “Nurture Human Nature.” *Doughnut Economics: Seven Ways to Think like a 21st-Century Economist*, by Kate Rawroth, Chelsea Green, 2017, pp. 81–110.
- <sup>87</sup> “Nurture Human Nature.” *Doughnut Economics: Seven Ways to Think like a 21st-Century Economist*, by Kate Rawroth, Chelsea Green, 2017, pp. 81–110.
- <sup>88</sup> Komlos, John. “Covert Racism in Economics.” *FinanzArchiv*, vol. 77, no. 1, 2021, p. 83., doi:10.1628/fa-2021-0003.
- <sup>89</sup> Walenta, Jayme. “Homo Economicus and the Capitalist Corporation: Decentring Authority and Ownership.” *The Handbook of Diverse Economies*, 2020, pp. 106–114., doi:10.4337/9781788119962.00019.
- <sup>90</sup> Dynan, Karen E., and Cecilia Elena Rouse. “The Underrepresentation of Women in Economics: A Study of Undergraduate Economics Students.” *The Journal of Economic Education*, vol. 28, no. 4, 1997, pp. 350–368., doi:10.1080/00220489709597939.
- <sup>91</sup> Kate Raworth in her TedTalk: *Why it’s time for ‘Doughnut Economics’*
- <sup>92</sup> Dempsey, Jessica. *Enterprising Nature: Economics, Markets, and Finance in Global Biodiversity Politics*. John Wiley & Sons, 2016.
- <sup>93</sup> ^
- <sup>94</sup> ^
- <sup>95</sup> ^
- <sup>96</sup> ^
- <sup>97</sup> Rosen, Amanda M. “The Wrong Solution at the Right Time: The Failure of the Kyoto Protocol on Climate Change.” *Politics & Policy*, vol. 43, no. 1, 2015, pp. 30–58., doi:10.1111/polp.12105.
- <sup>98</sup> Bayer, Patrick, and Michaël Aklin. “The European Union Emissions Trading System Reduced CO2 Emissions despite Low Prices.” *Proceedings of the National Academy of Sciences*, vol. 117, no. 16, 2020, pp. 8804–8812., doi:10.1073/pnas.1918128117.

- 
- <sup>99</sup> Rosen, Amanda M. “The Wrong Solution at the Right Time: The Failure of the Kyoto Protocol on Climate Change.” *Politics & Policy*, vol. 43, no. 1, 2015, pp. 30–58., doi:10.1111/polp.12105.
- <sup>100</sup> Dempsey, Jessica. *Enterprising Nature: Economics, Markets, and Finance in Global Biodiversity Politics*. John Wiley & Sons, 2016.
- <sup>101</sup> ^
- <sup>102</sup> Bhutto, Fatima. “Pakistan’s Most Terrifying Adversary Is Climate Change.” *The New York Times*, 2020, [www.nytimes.com/2020/09/27/opinion/pakistan-climate-change.html#:~:text=Pakistan%20is%20the%20fifth%20most,weather%20events%20in%20that%20period](http://www.nytimes.com/2020/09/27/opinion/pakistan-climate-change.html#:~:text=Pakistan%20is%20the%20fifth%20most,weather%20events%20in%20that%20period).
- <sup>103</sup> ^
- <sup>104</sup> ^
- <sup>105</sup> ^
- <sup>106</sup> Shahid, Kunwar Khuldune. “The IMF Takeover of Pakistan.” *The Diplomat*, 2019, [thediplomat.com/2019/07/the-imf-takeover-of-pakistan/](http://thediplomat.com/2019/07/the-imf-takeover-of-pakistan/).
- <sup>107</sup> Stevens, Alison Pearce. “Learning Rewires the Brain.” *Science News for Students*, 3 Dec. 2019, [www.sciencenewsforstudents.org/article/learning-rewires-brain](http://www.sciencenewsforstudents.org/article/learning-rewires-brain).
- <sup>108</sup> Salemi, Michael K. “Teaching Economic Literacy: Why, What and How.” *International Review of Economics Education*, vol. 4, no. 2, 2005, pp. 46–57., doi:10.1016/s1477-3880(15)30132-8.
- <sup>109</sup> Emerson, Tisha L., et al. “Women and the Choice to Study Economics.” *The Journal of Economic Education*, vol. 43, no. 4, 2012, pp. 349–362., doi:10.1080/00220485.2012.714306.
- <sup>110</sup> Stock, Wendy A. “Trends in Economics and Other Undergraduate Majors.” *American Economic Review*, 2017, [www.aeaweb.org/articles?id=10.1257/aer.p20171067](http://www.aeaweb.org/articles?id=10.1257/aer.p20171067).
- <sup>111</sup> Raworth, Kate. *Doughnut Economics: Seven Ways to Think like a 21st-Century Economist*. Chelsea Green, 2018.
- <sup>112</sup> The ‘About Us’ section of the Feminist Economics Journal <http://www.feministeconomics.net/about-us/>
- <sup>113</sup> The About section in the journal of Ecological Economics. [www.journals.elsevier.com/ecological-economics#:~:text=\(the%20economy\).- ,Ecological%20economics%20is%20an%20interdisciplinary%20field%20defined%20by%20a%20set,being%2C%20sustainability%2C%20and%20justice](http://www.journals.elsevier.com/ecological-economics#:~:text=(the%20economy).- ,Ecological%20economics%20is%20an%20interdisciplinary%20field%20defined%20by%20a%20set,being%2C%20sustainability%2C%20and%20justice).