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T'was slouching towards an illusion and now it's scurrying toward a delusion: A COVID19-shocked doughnut model economy¹

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Abstract: *An easy way of observing and predicting changes in the structure and behavior of any free-market economy is to track changes in its circular flow model of economic activity. Using book titles as a literature review in combinations with a few classics, I describe how the circular flows of free -market economies evolved from little, gentle, and now nearly powerless government role, culminating in super-duper capitalism. First the evolution generated great wealth and income, and of late also increasing inequality. Processes like globalization that allowed for economic convergence also spurred enormous tensions. The resulting stresses and strains are responsible for unpopular populism and nationalism. The doughnut economic model provides a reasonable framework for explaining what we observe. It shows a decline in the social foundations of human rights, made worse by breaches in the “planetary boundaries” both of which squeeze the livable space ever more tightly like a boa-constrictor suffocating its prey. In this paper I do not go as far as measuring my observations, but the directions for policy and future research have clearly been established. Regarding the latter, one may want to examine how COVID19 has shocked into scurrying towards a delusion of a system that was already slouching towards an illusion. It turns out that the illusion is not a new prediction. In his critique of Marx and rationalization of Kondratieff’s waves (K-waves) Schumpeter predicted that capitalism as an innovation is not immune to the “gale of creative destruction.”*

Key phrases: Circular flow model, doughnut economic model, social foundations of human rights, inclusive and sustainable development, planetary limits, unpopular populism, super-duper capitalism

JEL: O47, O33, E19, Z0



“I write what I like.” Steve Biko

¹ The first part of this essay partly states and restates things I wrote about in “Capitalism through the Shifting Eye of the Circular Flow Model” (<https://www.linkedin.com/pulse/capitalism-through-shifting-eye-circular-flow-model-amavilah/?trackingId=RPzldtWFRPu6t5tmGWfkiw%3D%3D> . May 5, 2019) and in “The rise of unpopular populism and the re-tribalization of the world: What now policy and research?” (<https://www.linkedin.com/pulse/rise-unpopular-populism-re-tribalization-world-what-policy-amavilah/> , December 23, 2017).

1. Introduction

One of my favorite hobbies is reading book titles. I enjoy reading book titles so much that I can easily spend hours between bookshelves in bookstores and libraries. I read all titles, but I am often in the business, economics, and current affairs sections. How much one can learn from the titles: the diversity of thoughts, the time periods, and what occupies attention during those periods. The first part of this essay is based on what I learned from book titles on visits to college bookstores at Brown University, University of Chicago, and Northwestern University in 2019. Over 15 titles attracted my attention, 75% of which were on two subject matters: Climate change, and income and wealth inequalities. The importance of both subject matters is common knowledge. My question is about whether there were early signs of the changing structure from economic theory. From book titles (a form of literature review) I observed changes in the circular flow model of economic activity (CFM) over time, changes that seem to have predicted the slouching of the global free-market economic system towards an illusion (super-duper capitalism), and hence increased inequality of income and wealth pre-Covid19. Now Covid19 has just shocked the system scurrying towards a delusion.

In this essay, I first outline the changes in the circular model over time that indicated the slouching towards an illusion. Second, I argue that super-duper capitalism has increased cross-country interactions via globalization without necessarily increasing intra-actions within countries. The unequal distribution of the benefits of globalization led to what may be called unpopular populism and nationalism. The third section reviews and remodels Raworth's (2012; 2017) doughnut model that suggests the thinning out of the doughnut's livable space (middle ring) as the hole in its center (deprivation space) has gotten bigger and bigger at the same time as the outer crust of the doughnut ("planetary boundaries") has been punctured. Fourthly, I shock the doughnut economy with COVID19 to illustrate how the model can be estimated empirically without implementing it. Finally, I make some concluding remarks, in which I link my observations to the four features that characterize the progress of human innovations like capitalism itself put forward by Schumpeter (1939; 1942; 1954).

2. Slouching towards an illusion

2.1 Circular flow model with little or no Government

The titles I browsed suggested changes in how decision-makers alter their interactions over time and such changes have important implications for wealth and income creation and distribution, and environmental changes, including climate change. As a result, the circular flow model (CFM), which is the first economic model in all textbooks on economic principles, has been morphing often unnoticed. For example, in Richard Cantillon's (1932[1755]) version of the CFM, labor works for farmers for wages, and for artisans in exchange of goods. Artisans supply goods to entrepreneurs for commodities. Entrepreneurs supply goods to property owners for commodities, and earn a profit from the commodities they sell to farmers. Farmers rent land from property owners. This "primitive" CFM suggested that trade creates money wealth, and the supply of money influences relative prices – the so-called "Cantillon effect" or the "non-neutrality of money" (Humphrey, 1991; cf. "neutrality of money" hypotheses, Snowdon and Vane, 2004).

Francois Quesnay's (1728[1759]) well-known *Tableau economique* acknowledged Cantillon, but disputed the suggestion that trade was the source of wealth, a dispute that appears in the background of Adam Smith's notion of the "invisible hand" (Smith, 1776[1776]). According to Smith trade extends the market size, but the extent to which it does so Smith questioned as apparent from his a critique of the mercantile system (Book IV), although he was gentler than Quesnay who argued that France's poverty was caused by mercantilism. As far as Quesnay was concerned wealth comes from "agricultural surplus" in the form of the rents, wages, and purchases the surplus generates. Three agents are behind this process: The *proprietary* (landowner) *class*, the *productive class* (agricultural laborers), the *sterile* (unproductive) *class* of *artisans* and *merchants*, and the government (italics are Quesnay's). For this reason, Smith entrusts government only with national defense; he is even skeptical about the government's effectiveness in providing public education, for example.

Next was Karl Marx (1818[1873]) who extended Quesnay by stressing the reproducibility of surplus by "circulation of capital" as a key driver of economic growth. Here wage-laborers create surplus value; employers either consume (hoard) surplus to sustain the steady state, or they re-invest the surplus to create even more surplus. To Marx the government and its instruments are no better for labor than capital, hence the need for a proletariat dictatorship. The fact that both Smith and Marx held skeptical views of the role of government is regrettably often missed.

2.2 CFM with Government: A gentle capitalism

It was John M. Keynes (1936) and his protégé, Richard Stone who conceptualized the textbook version of the CFM (Stone and Saffi Stone, 1959; 1961), although the diagram was formalized by Frank Knight (1951[1933]) and *redrawn* by Paul Samuelson (1948[1970]). I say "redrawn" to acknowledge that Stigler (1965) has argued that "Say's letters [to Malthus] have considerable merit, and in particular they contain a remarkable sketch of the circular flow model in an enterprise economy" (p. 325). This means that from Cantillon to Marx the role of government in the CFM was either absent or miniscule. Despite being more of a correlation than a causation, the absence of government also coincided with the brutal exploitation of labor by capital, the concern that gave traction to Marx and Marxism in Europe generally pre-WWI and in Russia particularly post-1917.

Coming out of the ravages of WWII nearly everyone accepted the positive role of government. Hence, Keynes, Knight, and Samuelson had a supportive company in redrawing the CFM with government in its center. The prosperity, peace, and relative freedom during the 1950s, civil rights campaigns and political struggles for independence in the 1960-1970s all came to be associated with effective governance – good or bad. At the time, the goodness of government under socialism and capitalism was a matter of degree since both the West and the USSR had admiring followers. In fact, for a while it looked like the growth and likability of government was stronger under socialism than capitalism and the West felt compelled to slow the tide in Cuba, Vietnam, etc. As a result, the foreign sector of the CFM expanded, and along with economic, military, and all other kind of global ties. These events suggested an image of a CFM with Government and Foreign sectors

2.3 CFM and the illusion of super-duper capitalism

By the 1980s, capitalism had re-invented itself, confident and triumphant over socialism in all areas except the mutually assured destructive power of nuclear weapons. Essentially Government relinquished its central role to business and free markets; the household became a decision-maker only insofar as business benefited more. The collapse of the Soviet Union in 1991, and the subsidence of the dotcom wave a decade later both strengthened the new capitalism. Globalization spread widely and aggressively, benefitting some, over-promising everyone, weakening the household and labor even more, infuriating many, and sowing the seeds of the unpopular populism and nationalism that ensued (Obstfeld, 2020). Politicians started to shun Government as unproductive again. President Ronald Reagan even declared that “government is the problem” – an idea he shared with Professor Milton Friedman (1993). The shift was not ideological; President Bill Clinton came to declare “the days of big government over.” Presumably, everyone can do everything alone better than government. It is difficult to assess what made the role of government such a bad idea at the time when at home significant social problems like homelessness were on the rise.

Not all economists brought into the virtue of super-duper capitalism and its redesigned CFM (Hoogvelt, 2001). For instance, Professor Stiglitz (2000[1986]) was concerned enough about the diminishing role of government that he added non-governmental organizations (NGOs) to the center of the CFM diagram, along with government. Government continued its role in national defense, law and order, infrastructure, education, and institutional governance. NGOs filled in the remaining nooks and crannies. Paul Krugman’s (1997) *Age of Diminished Expectations* and Krugman (1988) before that were other hints at the changing structure and function of the economy. As if all that was not a big enough jolt, technological advancement put business on steroids, giving birth to *Supercapitalism* (Reich, 2009), or *Hypercapitalism* (Gonick and Kasser, 2018), or “capitalism without capital” (Haskel and Westlake, 2018; Eyal, Szelenyi, and Townsley, 1998; cf. Piketty, 2014). My judgment is that capitalism is increasingly without capital and labor -- wasting both as I show below.

Historically the sources of wealth defined the CFM framework – the conventional nature of capitalist development (Giddens, 1971). In Antiquity wealth came from the “divine” robbery of convicts and slaves. Ostensibly the convicts, slaves, and poor people deserved plunder – making them worse-off did not contravene God’s will at all. During the Middle Ages a key enlightenment was the formation of an alliance between divinity and imperial power that allowed for the combination of land robbery and spoils of war as sources of national wealth (Genghis Khan), and personal or quasi-personal wealth (William the Conqueror). When the early Modern Era rolled around, land, classically defined, became the principal source of wealth, see e.g., Fugger and family in steel and copper and King Mansa Musa in gold. Hence, the significance of labor and capital, and the struggle between the two as described by Marx, is a relative phenomenon associated with the capitalist stage of human development, to paraphrase Marx. Not only did capitalism win the struggle, but it also won in ways Marxists never predicted. Clearly Marx and Engels (1848) knew that capitalism was by far the most productive economic system ever. However, they failed to anticipate that capital could co-opt labor and thereby weakening its “consciousness.” In fact, one can argue that the productivity of capitalism gave rise to inequality and exacerbated climate change in ways that redraws the CFM. In the new CFM the Household

(especially labor) has been disabled and thereby reducing its power in factor markets. The Firm's influence over Government as opposed to Government's influence over the Firm has increased. Very few politicians can now win elections without the sponsorship and blessings of corporations. After holding political offices politicians are then obliged to work as lobbyists for their former sponsors.

2.4 CFM, and tribal unpopular populism

Super-duper capitalism induced many dissatisfactions including what I call here "unpopular populism" In *Pop Internationalism* Krugman (1996) defines "pop internationalists [as] people who speak of international trade while ignoring basic economics and misusing economic figures" ([...] added). The book describes six misconceptions of pop internationalism. According to the misconceptions, the United States needed a "new paradigm" for "competing in the world marketplace." To be competitive all nations must have high "productivity" in the "high-value sectors," themselves characterized by a kind of managed comparative advantage. Michael Porter (1990) has called this kind of advantage "competitive advantage." In fact, in some circles "high-value sectors" were treated synonymously with high-tech sectors, made possible by "public-private partnerships." The success of the five misconceptions was then measured by the number of jobs created.

Pop internationalist ideas were indeed popular, and they spread easily and quickly globally, allowing for oligopolies like NAFTA, WTO, and the like to emerge, and institutions like the World Bank and IMF to recommend them to developing countries as good policy. Quite obviously economic theory predicts higher rents from these types of collusion, absence of cheating. But as John Perkins recites in his *Confessions of an Economic Hit Man* (2005), most policies of this genre have had heavy direct and indirect costs for developing countries.

During the Clinton administrations, pop internationalism came to mean the same thing as globalization. Star-quality academics gave globalization their blessings on the basis of new and conventional trade theory driven by "competitive advantages," including comparative advantage (Dixit and Stiglitz, 1977; Krugman, 1988; Borrus, Tyson, and Zysman, 1988; Sachs, 2005; Bhagwati, 2004; Stiglitz, 2002). The United States was the example of the virtues of globalization. The exponential growth of the money and other values of Silicon Valley (so-called dotcom economy) made America the envy of the world. But envy had two dissimilar sides: good and bad. On the good side, many countries wanted to be like America. As one simple example among numerous, the *Bundesregierung* (German federal government) sought to soften its immigration visa requirement to compete with the US H1B Visa for highly skilled workers from the East Indian sub-continent mainly. On the bad side was the feeling that the outcome of globalization was a net loss, and who to blame, but the guy at center stage (America). The twin bombings of the U.S. embassies in Kenya and Tanzania, to the extent both were in discriminant in design (carried out to hurt America and her supporters alike) suggest that hatred was towards the global capitalist system as much as it was towards America.

Again, at the height of pop internationalism both inward and outward globalization was acceptable: Canada, Mexico, and the U.S. were essentially becoming one economy, and moves for a European Union, African Union, and so on were accelerating. Economic geographers began to call this form

of globalization localization. Both research and policy expected positive externalities from localization in terms of agglomeration, neighborhood, cluster, and network effects (including the effects of information and communication technologies). However, after the 911 attacks, and mainly because of it, inward globalization became unpopular, giving roots to what I call unpopular populism and nationalism -- a phenomenon that accelerated as the U.S. pursued two wars against international terrorism.

Under President Bush II, the neo-conservative ideology of the day pushed for global American military dominance even if it meant violence if it kept the peace at home. The high cost of two big wars and many small wars, and the election to office of President Obama slowed the growth of unpopular populism, but only for a while. Today almost the same misconceptions that underscored pop internationalism have found new expressions and spokespersons. Globalization has been challenged by nationalism, adding fuel to the unpopular populism fire. Unpopular populism incites local support, but nearly always fails to garner global popularity. Back in 2016 *The Economist* magazine profiled this kind of populism under the title “The League of nationalists.” A few misconceptions appear to drive populism. One is the perceived threat to nationalism posed by the rise in immigration and the growth of interactive Diasporas. However, of the countries surveyed foreign-born residents made up a tiny fraction of their populations, about 9.3% on average, ranging from the low of 2% in India to a high of 16.5% in Sweden. The *Economist’s* data shows that all countries, especially developing ones, see globalization and other forms of global links as a “force for good.” However, immigrants are considered a liability in France, Denmark, Malaysia, and Thailand. The feelings of the latter two cases are fascinating considering the fact not many people migrate to those countries and the majority of those who do are likely ethnic Asians from neighboring countries. Measured as trade, globalization is popular mostly in industrialized countries even as the epicenter of unpopular populism is located there as well, although *The Economist* points out the exceptions of India, Malaysia, Thailand, and the Philippines where self-sufficiency is valued more than imports. This is rather paradoxical since more people emigrate than immigrate to these countries (cf. Ginsburgh, Perelman, and Pestieu, 2020).

There is enough research supporting globalization for its positive net effect, but that is not the point here (Amavilah, 2009a, b). Even among the countries *The Economist* described only a small fraction of them (US, Australia, UAE, Thailand, and India) consider themselves to be “the best country in the world.” Moreover, even within those countries only persons aged 55 years and older hold that view, which is understandable since they are the likely losers from globalization compared to their highly educated and globally-savvy 18-34-year-old compatriots. *The Economist* shows that anti-globalization, and hence unpopular populism, is a function of low literacy in Germany, Britain, and France (Obstfeld, 2020).

Now, suppose that globalization does indeed threaten nationalism, and that retribalization is a natural response. How demonstrably feasible is such a response to solving the ills of globalization? The answer is up in the air. Economic history, though, shows beyond any reasonable doubt that, more than any other single thing, the foreign market extent and the supporting institutions built for it have had a huge effect on the growth and productivity of the global economy (disregarding distributive issues). Summarizing his theory of economic growth in his acceptance lecture for the Nobel Prize Sir W.A. Lewis (1979) observed that the major global economies of scale the world has seen over the 1940-1970s years have resulted from long distance

transportation of goods, assuming older technologies. One might add even greater benefits have come from the transfer and adoption of ideas given newer information and communication technologies today (Schultz, 1981; 1961).

Under conditions of retribalization are we now to assume diseconomies of scale (diminishing returns to globalization) from global interactions? No matter one's answer, the question itself is puzzling since early accounts by roving anthropologists, treasure hunters, and missionaries helped identify the lack of a common language and ethno-fractionalization as major constraints on the progress of developing countries. These variables are now found in nearly all growth regressions about developing countries. *What does this all now mean? Does it mean development agencies (World Bank, IMF, UN agencies, and so on) have all been wrong to advise developing countries to abandon their tribes and tribal institutions, or should policy and research now pay special attention to the effects of tribal tendencies in industrialized countries as well?* Just wondering, and the wonder brings us back to some of the titles of the books I browsed. Field (2010) provided a historical trace of capitalism from whence it came along the goods and the bads it dispensed. On balance, Field concluded that capitalism has been more beneficial than dangerous to humanity. However, according to Korten (2010), capitalism created wealth for the few and poverty for many. Technology simply magnified inequality such that innovation is really an illusion about why "*so little [goes to] so many working so hard*" (Erixon and Weigel, 2016, [...] and italics added). In my viewpoint the question should be about "*why so much is going to so few from so many working so hard for so little.*" From that perspective I understand the reasoning in Pilling (2019) reference to growth as a delusion, and to wealth as a paradox as far as Mols and Jetten (2017; 2015) are concerned. The idea of "capitalism without capital" is strikingly illuminating; multimillion-dollar malls are disappearing with the increase in online shopping. The capital-wealthy are losing value to the data-wealthy (Google, Facebook, and on). The data wealthy use labor to produce services for them at no cost and only in exchange for a free social media account. These disparities are calling for: (i) an "agenda for a new economy" (Korten, 2009) in which social interactions are the building blocks; (ii) "economics for the common good" (Tirole, 2017; cf. Amavilah, 2016); and (iii) an "inclusive economy" (Tanner, 2018). Thus, the point that Piketty makes in *Capital and Ideology* (2020) is well-taken, although the book should have been titled "Capital is Ideology" or "Capital as Ideology."

The growing income and wealth gaps between the rich 1-percenters and the poor 90-percenters is a matter of fact in nearly every country now. The next big struggle is no longer between capital and labor; instead, it is the fight between the old object-based wealthy and new data-based wealthy. The old rich are now tethering on the edge of losing it all without replacing their wealth and power invested in multibillion physical structures and land to the new wealthy. The global consequence is that, as the wise African philosopher once said, "when two bull elephants fight, it is the grass beneath that suffers the most." In this case the "grass beneath" is labor and capital alike. Much of all this results from the fact that free markets misprice, or assign a zero value to, personal data. In reality the minimum price of data should equal to user value of the information in it before it is monetized as there is no way Facebook or Google can monetized data that doesn't have some

initial value in it. No mining company will not find gold where there is none; in fact, the extraction (including refinery) costs are generally lower the higher the grade.²

3. Scurrying towards a delusion

3.1 Raworth's original doughnut economy

Kate Raworth (2017[2012]) charge that “the [economic] theory – and the maths used to prove it – [is] absurdly narrow in its assumptions” (p.1, [...] added) and the “doughnut” model she has proposed both have revitalized the study of human wellbeing by adding “seven [new] ways of thinking about the 21st Century” economics (Raworth, 2012, Figure 1, p. 4; Rockstrom, et al, 2009, Figure 1, p. 1; see contrast in Raworth, 2017, pp. 24-25). The model is a novel ‘social innovation’ (Moulaert and MacCallum, 2019; Bornstein, 2007) that depicts a system in which human wellbeing is the sum of a *safe* and *humane* space, bordered by its social foundations on one hand and “planetary boundaries” on the other hand. The social foundations are the inner ring of the doughnut which form the backstop for *fundamental human rights* to water, food, health, gender equality, social equity, energy, jobs, voice, resilience, education, and income. The lack and insecurity of these rights represent a “critical human deprivation” (p. 9, and Table 1, p. 255). These rights sync perfectly with UN sustainable development goals (UNSDGs, 2015).

The outer ring of the doughnut constitutes the “planetary boundaries” of the system: climate change, fresh water use, nitrogen and phosphorus cycles, ocean acidification, chemical pollution, atmospheric aerosol loading, ozone depletion, biodiversity loss, and land use, in no particular order (Raworth, 2012, Figure 2, p. 11; Rockstrom et al, 2009, Figure 1, p. 1). These represent the limits beyond which there is no light at the end of the tunnel for humanity. Unfortunately, three of these boundaries (nitrogen and phosphorus cycles, biodiversity loss, and climate change) have already been breached (Raworth, 2017, Figure 2, p. 258; Rockstrom, et al 2009, Figure 1, p. 1).

The safe and humane space lies between the social foundations which form its base (lower limit) and the “planetary boundaries” (upper limit) which constrain it. For this space to be inclusive and sustainable it must be able to produce and distribute equitably positive externalities while generating either zero, and or internalizing all the negative externalities it generates. It must also do so in a way that pulls people out of the doughnut hole, i.e., it reaffirms human rights, and creates an inclusive and sustainable space for all at the table of a diverse humanity. Presently many people around the world are justified in reciting a rephrased versions of Malcolm X’s maxim that “I cannot sit at your table [during dinner] with nothing in my plate and call myself a diner. My being [at the table] does not make me [a diner]” (X, 1964). This means that diversity without inclusivity is unstable.

Obviously, Raworth’s construct depicts the theoretical world well and allows for a better understanding of the world we live in now. In our world today all the developing countries and most emerging market economies are deprived of fundamental human rights; they are in the inner

² A recent Netflix movie “The Social Media Dilemma” shows the costs and benefits of this model of attention extraction, manipulation, and selling.

ring of doughnut and most of their people are in the doughnut hole. Only a few industrialized countries have access to human rights, but the pressure that their production and consumption puts on the planetary constraints stresses the whole system enormously, affecting the hole of the doughnut disproportionately more and reducing the ability of “the safe and just space for humanity” to provide for “inclusive and sustainable development” (quotes are Raworth’s words).

Raworth (2017) asks a poignant question: “If humanity’s twenty-first-century goal is to get into the doughnut, what economic mindset will give us the best chance of getting there?” (p. 10, cf. Raworth, 2012). Applications of the doughnut model to answer that question are rapidly growing with the city of Amsterdam set for a post-COVID19 experiment is the latest example. In this paper I assess the nexus between the human rights on the left-hand side (LHS), and the livable space and planetary boundaries on the righthand side (RHS), in the aftermath of COVID19 (Raworth, 2020; 2017; Cole, 2015).

As conceived by the UN Sustainable Development Goals (UNSDGs), water, food, health, gender equality, social equity, energy, jobs, voice, resilience, education, and income represent fundamental human rights (Y_i). These rights are enhanced or hindered by the ability of the livable space (X_i) to pull people out of the doughnut inner ring (deprivation space). The ability and safety of the desirable space is a function of inclusive and sustainable economic development (Q_i). This kind of development is not a function of degenerative economic growth as normally represented by the growth of gross domestic product (GDP). Instead it is an agnostic growth addition that is self-regenerative and recognizes that human life is a large, complex, and nurturing system, and not the mechanical system of Newtonian physics implied by the Samuelsonian CFM (Raworth, 2017, pp. 1-26). The integral economy is self-transcendental, open to change, self-enhancing, and self-conserving, and Raworth calls this the “Schwartz’s value circumflex” (p. 93).

Economic development ($Q_i(X_i)$) is ultimately subject to “planetary boundaries” (Z_i). The new and emerging literature on degrowth (Chevtkovskaya, Paulsson, and Barca, 2019), the neoclassical redux (Stiglitz, Fitoussi, and Durand, 2019) that destress the quantity, and emphasize the quality, of GDP, or the new-found concern for inequality (Ostry, Loungani and Berg, 2019) – all these strands of literature support Raworth’s concern, and some answers are beginning to emerge. Newell and Patterson (2010) propose “climate capitalism” -- a supply-side economy in which capitalists value the environment because they make money from it (Keohane and Olmstead, 2007; Tester, et al, 2005; Smil. 2003; Frumkin, 2010). To Hahnel (2011) “climate capitalism” is not enough unless it assumes that negative externalities are the rule rather than the exception to capitalist production [and consumption]. This is because the want for profit is what motivates capitalism, not honorable things like caring for the earth’s climate (Perelman, 2000; Dowd, 2000).

Environmentally-friendly capitalism, even when profitable, is to be unlikely regenerative without correcting the demand-side ills – social injustice, racial and gender inequities, etc. Bowles and Gintis (2000a) have argued that not only has income and wealth inequality risen, it has become acceptable to such an extent that “egalitarianism” is laughed at while at the same time inequality is increasingly socially-inheritable (Bowles and Gintis, 200b; 2002). Even when acknowledged, argued Verba, et. al (1987) the idea of equality may have elitist labels attached to it. In that sense equality is really equalities: Public or private, economic (income and wealth), sociopolitical (rights

and participation), opportunity (real or ideal), and the role of the state in value formation, protection, promotion, and in the quality of leadership. In fact, what does product efficiency and equality mean in the global economy rule by “borderless” principles of “economics”? (Guest, 2011). Globalization has multiplied both the world problems and prospects as Venkatasubramanian (2017) writes in “*How Much Inequality Is Fair.*”

To illustrate let us express the doughnut relationship compactly as a Cobb-Douglas function:

$$Y_i = X_i^b Z_i^c, \quad (1)$$

where Y_i is a cross-section of the social foundations: water, food, health, gender equality, social equity, energy, jobs, voice, resilience, education, and income, X_i is a measure of “the safe and just space for humanity,” and Z_i are the upper limits of nature. Empirically, X_i can be proxied by variables like the human development index (HDI) or by the index of sustainable economic welfare (ISEW). The advantage of the HDI is that it is available for many countries. The weakness is that it is too aggregate, and its calculation include some elements of the inner ring such as health, education, and income where it is degenerative. The strengths of ISEW include the fact that it accounts for nonmarket dimensions of welfare, but it also includes indicators of planetary boundaries such as environmental cost, social costs on such things as crime, and its data is not readily available for most countries (Chelli, Ciommi, and Gigliarano, 2013; Castaneda, 1999; Mannis, undated). Parameters b, c Raworth parameters.

3.2 Raworth’s endogenous doughnut economy

We know from theory that $X_i = X_i(Q_i)$, where Q_i is some measure of sustainable and inclusive economic development which I define as economic growth and technological change, so that (1) is

$$Y_i = [X_i(Q_i)]^b Z_i^c. \quad (2)$$

In the endogenous growth model, the laws of motion behind (2) can be framed according to Lucas (1988, 1993) and Romer (1986, 1990), i.e.,

$$Q_i = AL_i^\alpha K_i^{*\beta} = AL_i^\alpha K_i^{\beta_K} (\mu H_i)^{\beta_H}, K^* = K_i + \mu H_i, \beta = \beta_K + \beta_H \quad (\text{Lucas})$$

$$Q_i = (AL_Q)^\alpha (AH_Q) (AK_Q)^\gamma \quad (\text{Romer})$$

This means that for Lucas and Romer, respectively, (2) becomes

$$Y_i = (AL_i)^{b\alpha} K_i^{b\beta_K} (\mu H_i)^{b\beta_H} Z_i^c \quad (3.1)$$

$$Y_i = A^{b(\alpha+\beta+\gamma)} L_Q^{b\alpha} H_Q^{b\beta} K_Q^{b\gamma} Z_i^c \quad (3.2)$$

Using Lucas $H = e^{\varphi S} L \Rightarrow H_i$ is the quality-adjusted labor (Jones, 1997, Becker, 1993), (3.1) can be restated as

$$Y_i = (A_i)^{b\alpha} K_i^{b\beta_K} \mu e^{b\beta_H \varphi} S L_i^{b\beta_H(\alpha+1)} Z_i^c \quad (4.1)$$

With $A_i^{b\alpha}$ constant and S years of schooling, $H = f(L)$, and L is growing at the same rate as population, in (4.1) $Y_i = f(K, Z)$ – an AK model. However, according to Amavilah's (2014a, b) extension of Romer $H_i = e^{\varphi q} N_i \Rightarrow H$ is quality-adjusted population (N_i), which is in line with Lewis (1965(1955)), and especially with Schultz's (1961, 1981) "investment in people." Also $L_Q = \lambda N_i$ (a fraction of N) such that (3.2) is now,

$$Y_i = A^{b(\alpha+\beta+\gamma)} (\lambda N_i^{b(\alpha+\beta)} e^{(b\beta\varphi q)}) K_Q^{b\gamma} Z_i^c \Rightarrow Y_i = f(A, H, K, Z). \quad (4.2)$$

Again, note that S and q are both quality adjusters, but S affects only L whereas q affects the whole economically active population (N).

4. The COVID19-shocked endogenous economy

If we shock the economy in (4) with COVID19, then (1) becomes

$$Y_i = X_i^b Z_i e^{\theta C}, \quad (5)$$

for $C \equiv COVID19$ exogenous, and X and Z are endogenous. Adding C , dividing both sides of (4.1) by L and taking the natural logarithms we get a Lucas productivity function as

$$y_i = a_L^* + \beta_K^* k_i + \beta_H^* S + b z_i + \theta C, \quad (6.1)$$

which is a *per worker* expression in which $a_L^* = b \ln A$ is a Lucas technological constant, $\beta_K^* = b\beta_K$ is enhanced plant-level physical capital elasticity and $\beta_H^* = b\mu\beta_H\varphi$ is enhanced plant-level elasticity of human capital measured by the educated and skilled labor (Lucas, 1993). However, in Romer we divide through (4.2) by N_i and take the natural logarithms resulting in

$$y_i = a_R^* + \gamma^* k_Q + \beta^* q + b z_i + \theta C, \quad (6.2)$$

where $a_R^* = b(\alpha + \beta + \gamma) \ln A$ is a Romer endogenous technology, $\gamma^* = b\gamma$ is enhanced elasticity of the national stock of physical capital, $\beta^* = a\beta\varphi$ is enhanced elasticity of national stock of human capital measured by quality population as q includes S . Thus, (6.2) is *per capita* (national productivity), whereas (6.1) is *per worker* (labor productivity).

Both Lucas and Romer can be applied to rationalize the doughnut model and both advance Solow greatly. However, the Lucas a_L^* is truly a Solow-neutral technology depending on labor productivity, whereas the Solow technological constant (a) is Hicks neutral. Even so, the two are not too far apart, because if L and A grow at constant rates, then the rate of a_L^* will also be constant and equal the exogenous rate dA/dt in Solow (1956, 1957) *originale*. For Romer a_R^* changes with α , β , and γ , which depend on the $N_i \equiv L_i + H_i$ constraint, and therefore a_R^* can neither be exogenous nor constant even if/when some of its parts are (Romer, 1990).

4.1 Variables and data

The theory is sound, but a major objective of theory is to guide practice, which brings us to the empirics of the model. In conventional growth theory, including endogenous versions, interest would be in conventional Q , assuming it determines X , and as X goes so too goes Y . Theory also observes unavoidable trade-offs between X and Y in which too much equality might be associated

with a significant loss of efficiency, low growth, and presumably lower social welfare. The logic is particularly good and for the most part consistent with history in at least parts of the world. However, until recently the direct effects of Z on X or indirectly on Y were assumed to be the exogenous to the original human curse by nature (where nature is God (Nature) for some and scientific processes (nature) for others). As Sir W. Arthur Lewis (1965, p. 23) put it “Nature is not particularly kind to man; left to herself she will overwhelm with weeds, with floods, with epidemics and with other disasters which man wards off by taking thought and action. It is by accepting the varied challenges presented by his environment that man is able, in innumerable ways, to wrest from nature more product for less effort. ... To accept the challenge of nature is to be willing to experiment, to seek out opportunities, to respond to openings, and generally to manoeuvre. The greatest growth occurs in societies where men have an eye to the economic chance, and are willing to stir themselves to seize it.” However, in their review of the contributions of Nordhaus and Romer to this literature, Fremstad, Petach, and Tavani (2019) show that the disregard for the planetary constraints has been mistaken, even after taking Pindyck’s (2013) skepticism into account about whether or not policy models can do any better.

Here our LHS variables (Y) are a set of human rights: water, food, health, gender equality, social equity, energy, jobs, voice, resilience, education, and income. These depend on RHS variables, key among them the safe and livable space (X). We can measure that space with the variables like HDI and ISEW. The limits to the capacity of the earth are simultaneously the limits to sustainable and inclusive development. The definitions and data on “planetary boundaries” are from Rockstrom, et al (2011). The variables include climate change, ocean acidification, stratospheric ozone depletion, two biogeochemical flow boundary of nitrogen cycle and phosphorous cycle, global fresh water use, change in land use, biodiversity loss, atmospheric aerosol loading, and chemical pollution – the latter two are yet to be quantified. Rockstrom et al tell us that biodiversity and nitrogen cycle boundaries have already been breached, with climate change, phosphorous cycle, and ocean acidification not too far behind in that order of emergency. Rockstrom, et al (2011) also provide useful parameters to help in assessing the intensity of pressure of the violations impose on the economies (p). My suggestion now is to use the status for each economy divided by the proposed (optimal) status that would be conducive to a safe and livable space, i.e., $p = \left(\frac{\text{current status}}{\text{optimal status}}\right)$. For any $p > 1$ the boundary has been raptured, and Rockstrom and colleagues indicate that for climate change $p = \frac{387}{350} = 1.11$ and for the Nitrogen Cycle $p = \frac{121}{35} = 3.46$. The former means that climate is 11% away from and above its optimality, and the latter the cycle is 3.5 times worse than it should be (Stockholm Resilience Center, 2020). By putting that much direct pressure on Q , Z ultimately affects Y adversely.

4.2 Possible estimation specification

The econometric specification is (6), adds time-specific effects (ξ), country-specific effects (η), and a random error (ε), yielding

$$y_i = \Pi_0 + \Pi_1 x_i + \Pi_2 z_i + \Pi_3 C + \xi_i + \eta_i + \varepsilon_i, \quad (7)$$

where x represents the conventional production and is reciprocal to human rights in the way Raworth describes (7). *Ceteris paribus*, we expect human rights to improve (for example, hunger goes down) as the material conditions improve. However, for a sustainable and safe space to open, planetary boundaries (z) must be honored, give, or take initial conditions (ξ, η) and the randomness of events (ε).

5. Concluding remark

The structure and behavior of most free-market economies and hence their governing economic system of capitalism have change quietly over time. The changes are predicted by changes in one of the basic economic models, the circular flow model of economic activity. Some role for Government allowed capitalism to grow (pre-1917) and to thrive (1918-1980s). Post-1980 Government became “the problem” and policies aided the emergence of super capitalism. Processes associated with super capitalism such as globalization and rapid technological change increased income and wealth, thereby setting in motion economic convergence across countries along with huge inequality within countries. I have term this capitalism super-duper capitalism. Super-duper capitalism enables all sorts of dissatisfactions, chief among these unpopular populism and nationalism. The stresses of super-duper capitalism strained both the social foundations and “planetary boundaries” thereby *boa-constricting* the “safe operating space for [all] humanity” and making it both less inclusive and sustainable. Shocked by COVID19 it is not farfetched to imagine a system that was already slouching towards an illusion now scurrying towards a delusion in response. This is not a new thought. Marx thought that the declining rate of profit will weaken capitalism leading to socialism and in the end to a heaven on earth he envisioned in communism. From Marx, Schumpeter (1942) derived the notion that the “gale of creative destruction [is the] process of industrial that continuously revolutionizes the economic structure *from within* increasingly creating a new one” (p. 83, original italics). The revolution has four key features, three of which I list but do not discuss: the circular, the role of the entrepreneur, the cyclical process of the development of innovations, and the decay of innovations. Capitalism is a human innovation; it decays when the entrepreneur becomes obsolete, its institutional foundations are destroyed, and the political strata are exposed (Schumpeter, 1954).³ This essay does not provide empirical measurements for the observations made. Nevertheless, it suggests directions for policy and future research.

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³ For historical context I recommend Chapter 4 on the “Econometricians and Turgot” of *History of Economic Analysis*, pp. 209-249.

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