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Rifkin's misreadings of the zero-marginal cost of production of information technology: ideology and the narrative of the demise of capitalism

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Abstract: In this paper, we address an epistemological issue of the relation between ideas and economic reality. Rifkin argues that the zero-marginal cost of technology favors the emergence of a sharing economy that undermines firms' profit function. We argue that Rifkin rhetorically amputates the cost function of its means of valuation. Using the method of "ordinary language philosophy," we show that Rifkin's reasoning is based on a confusion: the use of two distinct language games simultaneously. First, the economic expression of the valuation of costs; second, the same expression truncated from its calculation, feeding an ideological discourse on the demise of capitalism. That confusion brings two related issues: the difficulty of understanding the dynamics of production factors brought by new technologies, and the dismissal of real labor issues.

Keywords: Epistemology, marginal cost of production, ideology, new technology.

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Las interpretaciones equivocadas de Rifkin sobre costo marginal cero de producción de tecnología de la información: la ideología y la narrativa de la desaparición del capitalismo

Resumen: En este trabajo abordamos un tema epistemológico de la relación entre ideas y realidad económica. Rifkin sostiene que el costo marginal cero de la tecnología favorece la aparición de una economía colaborativa que debilita la función de ganancias de las empresas. Sostenemos que Rifkin amputa retóricamente la función de costo de sus medios de valoración. Con la utilización del método de "filosofía del lenguaje ordinario", mostramos que el razonamiento de Rifkin se basa en una confusión: el uso de dos juegos de lenguaje distintos simultáneamente. Primero, la expresión económica de la valoración del costo; segundo, la misma expresión truncada de su cálculo, alimentando un discurso ideológico sobre la desaparición del capitalismo. Esa confusión trae dos cuestiones relacionadas: la dificultad de comprender la dinámica de los factores productivos que traen las nuevas tecnologías y el despido de las cuestiones laborales reales.

Palabras clave: Epistemología, costo marginal de producción, ideología, nueva tecnologia.

As interpretações equivocadas de Rifkin sobre o custo marginal zero de produção da tecnologia da informação: a ideologia e a narrativa do fim do capitalismo

Resumo: Neste artigo, abordamos um tema epistemológico da relação entre ideias e realidade econômica. Rifkin defende que o custo marginal zero da tecnologia favorece o aparecimento de uma economia colaborativa que enfraquece a função do lucro das empresas. Argumentamos que Rifkin amputa retoricamente a função do custo de seus meios de valoração. Utilizando o método da "filosofia da linguagem comum", mostramos que o raciocínio de Rifkin se baseia em uma confusão: o uso simultâneo de dois jogos de linguagem distintos. Primeiro, a expressão econômica da valoração de custos; segundo, a mesma expressão reparada do cálculo, alimentando um discurso ideológico sobre o fim do capitalismo. Essa confusão levanta duas questões relacionadas: a dificuldade de entender a dinâmica dos fatores de produção gerada pelas novas tecnologias, e a negação das questões laborais reais.

Palavras-chave: Epistemologia, custo marginal de produção, ideologia, nova tecnologia.

Introduction

This paper is mainly concerned with the issue of epistemology in economics, i.e., the relation of ideas with reality[1]. The central question is: does the near-zero marginal cost of production of new technology is really bringing the demise of capitalism? From the perspective of neoclassical economic theory, the short answer to this question is "no". But answering too quickly risks missing the underlying epistemological issue at stake. Arguably, the epistemological issue is not *strictly* within the limit of the economic valuation of the factors of production. It is precisely when one dismisses the means of economic valuation that epistemological issues arise. The risk is that dubious views vaguely assimilated to economics, may take center stage in formulating economic policy[2] applied to new technologies. The significance of addressing the epistemology of the value of the factors of production points directly to the value of economic calculation in public decisions. To understand its significance, one needs to appreciate:

First, today's professional economists do not consider the epistemological issues of economics in their core activities. In other words, economists are unwilling to engage in defense of economic calculation since this task falls outside their strict professional duties. This leaves a chance for the economic illiterates on price valuations to dominate the market of ideas.

Second, the key role of economics remains (in its most simplified version) to valuate the output of productive actors at all possible levels of analysis. If economics is to serve policy objectives, prices and quantities remain one of the most transparent means for economics to inform politics. Accordingly, we address the epistemological issue to know what it means to undermine the valuation tools of economics (here, the costs of production factors) to generate a public debate on new technologies.

To disentangle the issue between unidentified disciplinary limits, as Rifkin's attack on the role of "near-zero marginal cost of production" in information technology, we use two methods of reasoning sequentially. The first one is the recognition that the marginal cost of production falls under the valuation of the factors of production. Accordingly, to assess the marginal cost of production, textbook economic theory specifies how fixed, variable, and marginal costs operate. The second is hermeneutics, i.e., scrutinizing all referencing, information

[1] The reader will gain to appreciate the argument made in this paper in relation to Mises' (2013) treatment of the misconception concerning the logical character of economics. We humbly suggest here that the "ordinary language philosophy" is the most efficient scholarly method to solve issues in economic epistemology and identify conceptual confusions in social sciences.

[2] Today, we witness alternative formulations of economics based on the circular economy, besides the resurgence of an old historical school idea of biological organism as a better model for sustainable economies. Alternatively, the position of serious economists is often silenced by the ideological filtering of journalists' views (a ready-made problem) and the selling of its solution. Hayek (1944) justifies the writing of *The Road to Serfdom* along those lines. Recently, Eklund (2020) demanded more engagement from professional economists in debates. He says that there is no reward system to motivate professional economists to do so. We quote: "A partial explanation for the reluctance to engage in broad societal issues and debate, I would argue, is directly structural. The main reason is our reward system and the incentive structures commanding both professional merit and recruitment. Narrow focus and scientific output are rightly rewarded, but there is hardly any value in writing a debate article or other input here in *Economisk Debatt* (a Swedish economic journal)." The choice of Rifkin's work needs to be seen in line with that argument. Rifkin may not impact policies in his homeland – the USA – but he does in the European Commission of the European Union. See, for example. Disponível em: https://cordis.europa.eu/article/id/115774-digital-europe-the-third-industrial-revolution. Acesso em: 1 jan 2020.

sources, and other available documentation Rifkin used to set the stage for capitalism's self-destruction. The following part presents Rifkin's starting point on the marginal cost of new technology production.

1. Rifkin's narrative of capitalism self-destruction

Ogden (2014) correctly reviews the main arguments in Rifkin's book, which claim that the sharing economy based on technological communities will overthrow corporate capitalism. Rifkin points out that "collaborative common", "sharing economy", "internet of things," and "new energy development" are available at a minimal cost reduce corporate profit margin. His theory presumes that new sharing technology will be more efficient than a corporation to deal with capital efficiency and coordinate the factors of production. Ultimately, he wants to show that technological communities' low cost of production will presumably reduce firms' profit margin so much that it will ultimately end up destroying capitalism itself.

Ogden perceived right away Rifkin's reasoning fallacies[3]. He also recognizes he may have failed to identify what kind of game Rifkin is really playing by declaring the demise of capitalism. This paper aims to identify that fallacy. We will show that Rifkin is setting up an economic concept - the so-called "near-zero marginal cost" of the sharing economy – to do a non-economic comment on new collaborative technology. How does he proceed to do that?

Rifkin uses this expression ambiguously to refer to the cost of production and the distribution of information technology. On the consumption side, the near-zero marginal cost refers to the marginal cost of reproducing one unit of technology. If one unit is sold to 100 clients, its marginal cost of reproduction is 0,01. With the internet, that same unit may reach 100.000 users, bringing the marginal cost of reproduction to 0,0001. On the production side, however, Rifkin (2014, p. 9) discounts both fixed and variable costs, rendering the calculation of the marginal cost of production impossible:

He dismisses the fixed cost (here loan, rent of working space independent to output):

> (…) the cost of actually producing each additional unit—if fixed costs are not counted—becomes essentially zero, making the product nearly free.

He discounts variable costs (here, the marketing, distribution, and labor dependent on output):

> The cost of marketing and distributing each copy is nearly free. The only cost is the amount of time consumed by creating the product and the cost of computing and connecting online. An e-book can be produced and distributed at near-zero marginal cost.

From the production side of the new technology, economists know that the marginal cost implies both fixed and variable costs of production. So, the cost of producing a new unit of

[3] Pointing toward Rifkin unclear usage of concepts, his tendency to name dropping, jargon-filled sentences and his assumption of historical inevitability.

online journalism, a cellphone, a 3D printing object, online education, music on a streaming platform etc., cannot be close to zero. Rifkin is not strictly using Marxist economics either. In a planned economy, the production manager would impose the price of the product to match *exactly* its marginal cost of production, so that there would be no profit (SCHUMPETER, 1942, p. 176; HAYEK, 2015). In a free market economy, the entrepreneur chooses a price proportional to all costs of production (fixed and variable costs) that yield maximum profit within the constraints of market prices. One important remark is that Rifkin's dismissal of fixed and variable costs renders it impossible to put a price on the factors of production. In this sense, Rifkin operates within the socialist commonwealth, whereby money does not play a role in the economic calculation (MISES, 1990, p. 21).

We suggest that, since Rifkin is not using the economic valuation of the means of production, namely fixed, variable, and marginal costs, he operates outside economics. The solution we found is that Rifkin refers to "the marginal cost of production" semantically, as an instance of a historical materialism's interpretation (MARX, 1976, p. 1) of the vanishing of profit and the subsequent demise of capitalism. Let us test this suggestion on his own writings. The goal is to see if Rifkin operates within the Marxist rhetoric[4] and not under the neoclassical framework. Since our interpretation seems plausible, why should we bother to verify it further? There is one good reason for doing that. If Rifkin does not operate within economics, the reader of his book will have no means to understand the dynamics animating new technology.

To appreciate the difference between the use of the same expression, one operating in textbook economic theory and the other in Marxist ideology, we need to show how each of them operates within different language games[5].

2. A note on method: a Wittgensteinian examination of language

The distinction between the economic expression "marginal cost of production" of new technology, and Rifkin's Marxist misuse of it, is shown by common-sense evidence[6], not empirics. This is why it calls for a method appropriate to that kind of problem. The "ordinary language philosophy" (HACKER, 1996; PASSMORE, 1957; MCGINN, 1997; RORTY, 1967) seeks

[4] In page 9, he indicates that "If (the cost of production would be near zero) that were to happen, profit, the lifeblood of capitalism, would dry up". In page 15, he repeated his motto of the demise of capitalism: "The Internet of things is already boosting productivity to the point where the marginal cost of producing many goods and services is nearly zero, making them practically free. The result is corporate profits are beginning to dry up, property rights are weakening, and an economy based on scarcity is slowly giving way to an economy of abundance".

[5] Following Wittgenstein (1974, p 59-60; p. 23): "the explanation of the meaning explains the use of the word. The use of a word in the language is its meaning. Grammar describes the use of words in the language. So, it has somewhat the same relation to the language as the description of a game, the rules of the game, have to the game".

[6] Wittgenstein calls them "reminders" of how the language is used.

precisely to distinguish between the use and misuse of given expressions. Philosophers have used this method of language scrutiny to solve philosophical puzzles[7].

Ordinary language philosophy is used to identify, clarify, and even 'dissolve' confusions. It is particularly effective to deal with problems created within our language, by means of our language. We can demonstrate this method by showing that the problem Rifkin is dealing with is not an empirical problem of cost calculation, but a problem of misuse of economic expressions. To answer the epistemological question concerning the link of some ideas to economic reality, we need to distinguish sharply between the cost valuation of new technology, and the diffusion of unverified assumptions about it.

To make this distinction, we use the grammatical investigation of language to distinguish which language game one expression belongs to. The method is based upon a scrutiny of language use. In this case, it allows differentiating between the principles for calculating production costs and Rifkin's use of it. That difference is not a matter of hypotheses in natural science. In other words, no scientific method can be applied to settle the difference between "neoclassical theorizing" and Rifkin's Marxist rhetoric. The only way to do that correctly is to engage in what Wittgenstein calls a clarification of the misunderstanding of the logic of our language (WITTGENSTEIN, 1958, p. 93):

> [Those misunderstandings are] not empirical problems but are misunderstandings that are solved […] by looking into the workings of our language, and that in such a way as to make use and recognize those workings: in despite of an urge to misunderstand them. (WITTGENSTEIN, 1958, p. 109)

On the surface, Rifkin seems to be dealing with the cost function in economic theory. The goal of the ordinary language philosophy is hermeneutical, i.e., a close study of the use of words in a text. It is the only method that helps the reader clearly realize that Rifkin operates within the realm of a "narrative of social destruction". To be more scholarly precise, he operates within the Marxist materialist narrative of the demise of capitalism. Here, Rifkin's use of the expression "marginal cost" is nothing more than the absurd Marxist presupposition that one can deal with cost evaluation outside economic calculation. As Mannheim said (1936, p. 89).

> the danger in presuppositions (…) lies in the fact that an ontology handed down through tradition obstructs new developments, especially in the basic modes of thinking. As long as the particularity of the conventional theoretical framework remains unquestioned, we will remain the toils of a static mode of thought which is inadequate to our present stage of historical and intellectual development.

[7] It has traditionally dealt with two major issues: 1) the picture theory of language, i.e., the question to know if the language represents the things that it is naming and 2) The mind-body problem, i.e., the question to know if the mind is equipped like the body with agencies allowing to solve problems? In this paper, we use ordinary language philosophy to dissolve issues that happen at the junction of disciplines, namely economics and political ideology. The intellectual effort consists to operate clarification across several disciplines. In doing so, one appreciates the interdisciplinary breath of scholarship displayed by Austrian economists like Ludwig Von Mises and Fredrich A. Hayek.

Rifkin's use of "the near-zero marginal cost" is a typical case of intellectual bad faith. His claim of capitalism's inherent contradiction is the direct result of his Marxist confusion on economic calculation. The Marxist ideology[8] assumes a static view of capital, as unproductive accumulation. He does not clearly announce his Marxist ontology. This is one feature of ideology: to proceed by successive concealments, not by clarifications. Accordingly, Rifkin's confusion of the principles of cost calculation with the narrative of capitalism self-destruction conceals the operation of the new technology economy. In the development of new technology, capital is the object of sophisticated cost minimization, and possible increasing return to scale.

The result of the Wittgensteinian methodological detour is to clarify the costs of the production function and Rifkin's ontology successively:

The following section 3 shows the changes in the marginal cost of the production of new technology can only be understood along with fixed and variable costs of production. This is clearly not what Rifkin is discussing.

3. Cost calculation in the production function

Rifkin uses the expression "near-zero marginal cost" 90 times across his book to address the costs of production and consumption of the sharing economy indistinctly. To clarify the meaning of this expression in economics, we need to pose the basic variables of the production cost model (VARIAN, 2020).

3.1. The firm's fixed and variable costs

Let us start by defining the firm's total cost as a sum of two variables: fixed cost (F) and variable cost $C_v(y)$, assuming that Y is the firm's output. The total cost of production can be written as follow:

$$C(y) = F + C_v(y)$$

The total cost of production measures these two costs per unit of output. The fixed cost measures the cost of the machines or the loan necessary to produce a product. In manufacturing or non-manufacturing, fixed costs may include the rent or the mortgage payment on building facilities. Here, we assume the fixed cost is calculated in the short run. It means that fixed costs tend to decrease as the output increases. In the long run, those fixed production factors can be considered "quasi-fixed" factors of production (VARIAN, 2014, p. 375). Hence, one would need to consider the wear of production materials, the change of factory size, or labor force size as increasing costs.

The variable costs are the changing costs of raw materials needed to build something. For example, those raw materials are subjected to market price fluctuations. The variable

[8] It happens that Rifkin (2014, p. 13) himself defined ideology very well (in what he takes mistakenly to be Kuhn's definition of paradigm), i.e., "a system of beliefs and assumptions that operate together to establish an integrated and unified worldview that is so convincing and compelling that it is regarded as tantamount to reality itself".

cost depends on the production output. If one produces one unit, the variable cost is 1. If it produces 2, the variable cost doubles. Hence, the average variable cost increases when the output increases.

Combining the fixed and variable costs, the total cost of a firm's production produces a U-shaped average cost curve. If the production is more efficient, the producer may decrease the variable costs momentarily. However, variable costs will continue to increase sharply when the production scales up. If we consider both fixed and variable costs in relation to the firm's output, we are also considering the marginal cost of production.

3.2. The marginal cost of production

Hal Varian (2014, p. 369) defines marginal cost as the change in costs divided by a change in output. The ratio of production, i.e., the marginal cost, is noted MC(y). This measure of productivity asks: how will the cost change given a change of output Δy?

Before presenting the marginal cost model, let us address Rifkin's expressions: "zero marginal cost" and "near-zero marginal cost". If the marginal cost is at zero, there is no production because the marginal cost is the sum of fixed and variable costs. In other words, to have zero marginal cost, the firm needs to be not producing anything (or zero units of production). Let us assume that Rifkin means that there is still some production, but digital production of one more unit brings the firm's cost of production to a "near-zero marginal cost". We will verify below if that is possible according to the marginal cost model of the firm. We assume here that the firm's cost of production includes fixed and variable costs of production. The marginal cost is:

$$MC(y) = \frac{\Delta c(y)}{\Delta y} = \frac{c(y+\Delta y) - C(y)}{\Delta y}$$

The marginal cost of production is a measure of a rate of change. Rifkin assumes MC is a static value given the cost of the output of one unit divided by the (indefinite) number of its users: close to zero when it comes to information technology. Since the marginal cost of technological output is a rate of change, it assumes an increase in output with a relative change in costs. So, the marginal cost is measuring a rate of change in production.

1- For the sake of Rifkin's argument, let us assume the production of software when the cost of reproducing it is near zero, i.e., after the initial cost of writing the new code, and before any additional updates. At this precise moment, the variable cost of production of software is decreasing. It decreases because there is no additional "code writing material" involved in the production of one more unit of software. One software developer developing one unit of software is 1/1. To assume that the decrease of the variable cost of production of software is continuous, one must integrate that the same developer producing one unit of software distributes it through a digital network, let us say 1/10 000 users = 0,0001 — basically, when software is reproduced (or distributed) at almost no additional variable cost.

Even within this particular scenario of software production, there is no indication that the "near-zero marginal cost" of software production will bring the firm's profit[9] down to the point of bankruptcy, as Rifkin strongly advocates. The average variable cost cannot stay fixed because software production is one of the most dynamic fields of the technology industry.

2- The average variable cost will rise again due to the fixed factors of production, like updated computers, newly educated labor force, or extensive worldwide network of servers.

3- The average variable cost and the marginal cost are the same when producing the first unit of software, but they increase later as more software units are produced.

After this clarification of the cost function, one sees more clearly that Rifkin is not operating within the parameters of economic theory. Rifkin does not discuss any alternative cost functions. Section 4 below shows that he does a "selective reading" of marginal cost to set up his Marxist agenda.

4. Narrating deception: productivity as destruction

Since Rifkin is not engaging in calculus to demonstrate changes in costs in the production output of digital technology, his argument cannot be empirical. The only explanation is that he is working with scholarly references used essentially as instruments of persuasion.

To show that, we review all the references he uses in selected pages (RIFKIN, 2014, p. 10-15) to lead the reader to think that a near-zero marginal cost is sign of capitalism destruction (rather than a way to assess if the firm's behavior is cost-minimizing). He coins the expression "extreme productivity" to dismiss the real economic definition of productivity. According to him, the "zero marginal cost of production" leads to a shrinking of the firm's capital due to its capture by new technology communities. It implies that markets for corporations disappear for the benefit of the niche economies of technological communities.

We will reveal his uses of references in chapter 1, entitled *The great paradigm shift from market capitalism to collaborative common* (RIFKIN, 2014, p. 10-15). We take each element of his argumentation on marginal cost linearly and check all the references grounding its authority.

4.1. The dismissal of capitalism

To justify his argument on the dismissal of capitalism, Rifkin (2014, p. 10) uses Oskar Lange's paper published in 1936 on "the economic theory of socialism". In his selected extract (LANGE, 1936, p. 129-130), Lange talks about the difficulty of innovative firms recovering their R&D investment because of low returns on cheaper commodities. Lange tries to indicate that the condition of market competition, especially in innovation, is unsustainable. Innovative industries seek to restrict new entrants and establish monopolies to protect their investments. He suggests that the contradiction between long-term investment and value destruction through innovation is fatal to the capitalist system. As such, the state should be more efficient

[9] Even if it is, rhetorically, through technology communities such as "collaborative commons" (RIFKIN, 2014, p. 7).

in employing innovative investment through public projects. For Rifkin (2014, p. 12), what matters is to maintain the idea of an inherent contradiction (schizophrenia) within the capitalist system, based on the nonsense that cheap commodities undermine productivity:

> the inherent entrepreneurial dynamism of competitive markets that drives productivity up and marginal costs down. Economists have long understood that the most efficient economy is one in which consumers pay only for the marginal cost of the goods they purchase. But if consumers pay only for the marginal cost and those costs continue to race toward zero, businesses would not be able to ensure a return on their investment and sufficient profit to satisfy their shareholders.

Rifkin and Lange neglect the role of creative destruction (SCHUMPETER, 1942) as an alternative explanation of innovation. The unceasing change of firms by more productive ones is the rule in an open market economy. Further, Rifkin avoids the issue of socialist cost calculation, which is the topic of Lange's paper. Lange argues that it is possible to calculate the investment rate, the volume and structure of public goods, and the price of all inputs without the market (VON MISES, 1990; KOCHANOWICS, 1990, p. 22-25; HAYEK, 2015; SCHUMPETER, 1942, p. 172-186). A central planning board determines those factors of production to minimize costs and make the marginal cost equal to price. Rifkin supposes that new technological communities play the role of Lange's technocratic planning boards. This helps him to argue for a conflict between cooperative associations of techies and corporations. In today's economy, corporations and tech communities coordinate productive activities requiring the same production factors[10].

4.2. Technology unemployment

Rifkin (2014, p. 12) continues hammering his idea of the destruction of capitalism using Keynes' (1930) concept of "technological unemployment". Keynes argues that an increase in productivity reduces the cost of goods and services, but also the labor revenue to unemployment. No economist today believes the Luddites fables. As Brynjofsson and McAfee (2014, p. 176-7) pointed out, the reduction of working hours due to productivity has directly increased leisure time as well as the development of new forms of work (aka hybrid entrepreneurship, intrapreneurship (BRAUNERJHELM et al., 2018). The other issue is short-term maladjustment of skills and education, when firms are obliged to adapt rapidly to technical change. Here again, Rifkin does not address either labor flexibility (GRILICHES, 1997; HANUSHEK; KIMKO, 2000) or educational reforms (EKLUND; PETTERSSON, 2017; KRUEGER; LINDAHL, 2001) to make labor adjustments possible and avoid unproductive social costs.

[10] Eric Raymond, one of the pioneers of open-source software (RAYMOND, 1999), had made cogently the point in his blog, saying that even if the cost of reproduction of software is near zero, the fixed cost of production in terms of education, skills, research and development are substantial on the short and long terms. Disponível em: http://esr.ibiblio.org/?p=5558. Acesso em: 1 jan 2020.

4.3. Anomaly of the economic regime

Rifkin (2014, p. 12) cites Summers and Delong's paper (2001) as a more recent source of analysis on the role of IT in the new economy. Those economists draw a similar picture than we have so far on the new technologies. Namely, they indicate that IT has pushed a new technological frontier in which growth effects are still unknown but important (as electricity was before, see (JOVANOVIC; ROUSSEAU, 2005). They indicate that new technology prices equal to the marginal costs. They argue that the condition to consider a marginal cost of distribution (we assume they mean the cost of reproduction) close to zero means that firms need to develop a new business model to find revenue sources. They suggest that new revenues models should not be supported by state allocations, but temporary monopolies. In theory[11], everyone knows that temporary monopolies permitted by technological advances allow firms to finance their R&D costs.

Rifkin sees a contraction in the need for a temporary monopoly within a competitive market. Every economist knows this is not the case. The dynamic of the production system accommodates different stages of technological development. Those stages are not fixed systems confronting each other. Summer & DeLong indicate they do not know the direction the IT innovation will take. Rifkin takes their comments to reveal anomalies in the viability of the economic "regime". He crystallizes a time-sensitive moment of innovation as if it was a shift of a political regime. Assuming the political metaphor allows him to pound again his reader with his dream of the inevitable self-destruction of the capitalist system. Nothing in what Summers & DeLong said lead to that ideological twist. Entrepreneurs have found creative ways to deal with new products or services (with a low marginal cost of reproduction) by conceiving multisided platforms. Rochet and Tirole (2003) and Evans and Schmalensee (2016) have defined multisided platforms as a market where different types of actors (free users, marketeer, developers) can appropriately charge for the different services provided. Further research (ROCHET; TIROLE, 2003; 2004; 2006) has studied how business owners may charge a mix of membership and usage fees to cover their fixed and variable costs.

Concluding this section, our hermeneutic analysis reveals that Rifkin is suffering from a selection bias. For him, the anomalies of the capitalist system are so overwhelming that the entrepreneurs themselves cannot correct them. However, is Rifkin's claim for a "paradigm shift" an adequate answer to the entrepreneur's issue with costs?

Conclusion

In conclusion, we recall few of the issues of cost calculation Rifkin is so conveniently avoiding. We also ask an ethical question: what does it mean to ignore costs and substitute them with ideological shortcuts?

[11] Arrow (1962) has shown that firms will underinvest in invention and research (as compared to the ideal of a technological advantage and monopoly) because it is risky, and the benefit of the innovation can be appropriated only to a limited extent.

Rifkin's treatment of "the near-zero marginal cost of production" selects some aspects of costs and disregards how to properly calculate them in economics. Besides the fact that Rifkin seems obsessed with advertising the ending of capitalism, there are other lessons to take from his renewed exercise in M arxist rhetoric today.

The first remark is an epistemological issue. The relation between new technology and economics demands more knowledge of the productive factors, not less. For example, suppose Rifkin talks of the "near-zero marginal cost" of new technology. In that case, he should start with basic principles: 1- the profit maximization, 2- the cost-minimizing, and 3- the return to scale of new technology products.

1- All firms or organizations follow the profit maximization principle by increasing their revenues above their costs. For that, they make sure that their cost of production (fixed, variable, and marginal costs) equates to at least its market price. 2- Further, the sharing economy is efficient by increasing revenues and simultaneously minimizing its costs. The IT industry has been driving new solutions to minimize production costs, by delocalizing software development, supplying complex systems, and developing open-source operating systems. 3- Finally, firms that decreased their average costs have generated an increasing return to scale. New tech firms have shaped the supply side by using specialized labor[12] to cope with combinatorial solutions in digital technologies. There are endless combinations, since the development of new technologies[13] increases exponentially. The issue is and will always be to deal with the adjustments of the job market in relation to effective labor developing those technologies. Since the mid-1990s, the question of labor requires creative solutions to be able to process those new combinations (SIMON, 1971; WEITZMAN, 1998; BRYNJOLFSSON; MCAFEE, 2014, p. 82). Then, what does it mean to ignore costs?

To ignore costs means to give up economic and social responsibilities. *Economic* because when one removes the ability to perform production cost calculation, one removes the ability to evaluate the interaction between different factors of production. *Social* because the coordination of the factors of production also implies the best allocation of human resources among productive activities. Messing up with that equation is a very inconsiderate way to deal with human potential, i.e., the future productive capabilities of individuals.

References

ARROW, K. J. The economic implications of learning by doing. **Review of Economic Studies**, v. 29, p. 155-173, 1962.

BRAUNERHJELM, P.; DING, D.; THULIN, P. The knowledge spillover theory of intrapreneurship. **Small Business Economics**, v. 51, p. 1–30, 2018.

[12] That is, technological communities, notably software developers' communities such as open source.

[13] Evans e Schmalensee (2016, p. 40-7) called them "turbocharging technologies", which are processors, the physical internet, web software technologies, broadband communications, programming languages, operating systems and cloud technologies.

BRYNJOLFSSON, E,; McAFEE, A. **The second machine age**: Work, progress, and prosperity in a time of brilliant technologies. WW Norton & Company, 2014.

DELONG, J. B.; L. H. SUMMERS. The 'new economy': background, historical perspective, questions, and speculations. **Economic Review-Federal Reserve Bank of Kansas City,** v. 86, n. 4, 2001.

EKLUND, J. Varför engagerar sig inte fler ekonomer i debatten? **Ekonomisk Debatt,** v. 48, n. 3, 2020.

EKLUND, J,; L. PETTERSSON, L. **Högskola i otakt.** Dialogos Förlag, 2017.

EVANS, D.S.; SCHMALENSEE, R. **Matchmakers**: the new economics of multisided platform. Boston: Harvard Business Review Press, 2016.

GRILICHES, Z. Education, human capital, and growth: a personal perspective. **Journal of Labor Economics**, v. 15, n. 1, 1997.

HACKER, P. M. S. **Wittgenstein's place in twentieth century analytic philosophy.** Oxford: Blackwell publisher, 1997.

HANUSHEK, E. A.,; KIMKO, D. Schooling, labor-force quality, and the growth of nations. **American economic review,** v. 90, n. 5, 2000.

HAYEK, F. A. **The Road to Serfdom**. London: Routledge Classics, 1944.

HAYEK, F. A. **Collectivist Economic Planning.** Auburn: Mises Institute, 2015.

JOVANOVIC, B.; ROUSSEAU, P. L. **General purpose technologies.** Amsterdam: Elsevier, 2005.

KEYNES, J M. **Economic possibilities for our grandchildren.** London: Palgrave Macmillan, 1930/2010.

KOCHANOWICZ, J. **Introduction to the edition.** Economic Calculation in the socialist commonwealth. Auburn: Mises Institute, 2015.

KRUEGER, A. B.,; M LINDAHL Education for growth: Why and for whom?. **Journal of economic literature**, v. 39, n. 4, 2001.

LANGE, O. On the economic theory of socialism: Part one. **The review of economic studies,** v. 4, n. 1, 1936.

MCGINN, M. **Wittgenstein and the philosophical investigations**, Routledge: New York, 1996.

MANNHEIM K. **Ideology and Utopia, an introduction to the sociology of knowledge**. New York: A Harvest Book Harcourt Brace and Company, 1936.

MARX, K. Capital. **London**: Penguin Classics, 1958/1976.

MISES VON, L. **Epistemological problems of economics**. Indianapolis: Liberty funds, 2013.

MISES VON, L. **Economic Calculation in the Socialist Commonwealth**. Auburn: Mises Institute, 1990/2012.

OGDEN, T. No Value. **Stanford Social Innovation Review**, Fall 2014. Available at : https://ssir.org/book_reviews/entry/no_value. Retrieved on: 12 oct 2021.

PASSMORE, J. **A Hundred Years of Philosophy**, London: Penguin Books, 1957.

RIFKIN, J. **The zero marginal cost society:** The internet of things, the collaborative commons, and the eclipse of capitalism. St. Martin's Press, 2014.

ROCHET, J-C.; TIROLE, J. Platform competition in two-sided markets. **Journal of the european economic association**, v. 1, n. 4, 2003.

ROCHET, J-C.; J. TIROLE. **Two-sided markets: an overview**. Institut d'Economie Industrielle working paper, 2004.

ROCHET, J-C,; J TIROLE. Two-sided markets: a progress report. **The RAND journal of economics,** v. 37, n. 3, 2006.

RORTY, R. **The linguistic turn: recent essays in philosophical method.** Chicago: The University of Chicago Press, 1967.

RAYMOND, E. S. **The cathedral and the bazaar.** Cambridge: O'Reilly, 1999.

SIMON, H. A. Designing organizations for an information rich world. In: GREEN-BERGER, M. (ed.). **Computers, Communications and the Public Interest**, Johns Hopkins Press, 1971.

SCHUMPETER, J. A. **Capitalism, Socialism and Democracy.** New York: Basic Books, 1942.

VARIAN, HAL R. **Intermediate microeconomics with calculus:** a modern approach. New York: WW Norton & Company, 2020.

WEITZMAN, M. L. Recombinant growth. **The Quarterly Journal of Economics**, v. 113, n. 2, 1998.

WITTGENSTEIN, L. **Philosophical grammar.** Oxford: Basic Blackwell, 1974.

WITTGENSTEIN, L. **Philosophical investigations**. Englewood Cliffs: Prentice Hall, 1958.

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