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Much Work in a Leisure-Intensive Economy: Why Keynes Was Both Right and Wrong

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Abstract

A simple analytical model is used to examine how rising labor productivity reduces working time in an economy of agents who are both workers and consumers. The model endogenizes the feedback from leisure to employment due to the demand for leisure-complementing goods by consumers. It is found that the rate at which rising labor productivity is translated into leisure is not nearly as fast as Keynes had predicted under the assumption that leisure is solely a residual outcome of economic activity rather than also a stimulant of demand and employment. Keynes was right to forecast a leisure-intensive economy, but wrong to neglect the consequences of leisure for work.

Keywords: leisure time, labor productivity, technological innovation, employment
JEL codes: J22, J24, O12

> *Thus for the first time since his creation man will be faced with his real, his permanent problem – how to use his freedom from pressing economic cares, how to occupy the leisure, which science and compound interest will have won for him, to live wisely and agreeably and well….*
>
> *Yet there is no country and no people, I think, who can look forward to the age of leisure and of abundance without a dread. For we have been trained too long to strive and not to enjoy….*
>
> *For many ages to come the old Adam will be so strong in us that everybody will need to do some work if he is to be contented…. Three-hour shifts or a fifteen-hour week may put off the problem for a great while. For three hours a day is quite enough to satisfy the old Adam in most of us!*
>
> -- John Maynard Keynes (1930)

1. Introduction

Why are most people still working long hours despite the enormous rise in labor productivity that Keynes (1930) had predicted would allow his grandchildren's generation to enjoy a leisure-intensive economy?

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In a volume devoted to this question, sixteen economists have discussed various explanations for why Keynes' prediction was off the mark. (Pecchi and Piga, 2008) In my own work on the subject (Rtischev 2018, 2020), I showed that one reason could be the diversion of productivity gains into bidding wars for socially-scarce goods (Hirsch 1977) such as desirable locations, schools, and careers. Others have argued the opposite, namely that Keynes' prediction did not go far enough and that all work is ending. (Rifkin 1995, Livingston 2016)

Most of the critiques, however, accept Keynes' underlying assumption that leisure is preferred to work, unconditionally. Yet it is easy to see that leisure is a double-edged sword. Leisure is a good when it is fun, interesting, relaxing, or fulfilling. Leisure is a bad when it is boring or demeaning. For instance, a poor unemployed person has much leisure but few ways to enjoy it. A prisoner also suffers many hours of unhappy leisure. In contrast, a well-paid but busy worker has little free time but can enjoy it more intensely by consuming goods and services to pursue hobbies or interests.

This suggests the following process by which rising labor productivity is not as tightly coupled to the expansion of leisure time as Keynes had figured. As productivity rises and less labor is needed to produce the same goods as before, more people find themselves with more leisure and at risk of boredom. They demand goods (and services) to avoid boredom and enjoy their leisure. This demand stimulates supply of ever more diverse and sophisticated leisure-complementing goods. To supply these goods, jobs are created in marketing, developing, producing, distributing, advertising, and retailing them. In effect, people go to work to enhance the leisure of others. Then, in their free time, to avoid boredom themselves, they spend some of their income on leisure-complements produced by others.

In other words, as a scarcity economy gives way to an abundance economy, what changes is not just the amount of work but also the purpose of work. In a scarcity economy, people work producing goods to ensure that others are fed, clothed, and housed, and use most of their wages to pay for their own food, clothes, housing, and other essentials. In an abundance economy, most people work to produce goods to enhance the leisure of others, and also spend a significant fraction of their income on goods to enjoy their own leisure.

As productivity rises, the economy stays almost as busy, but with a greater portion of the earning and spending being related to goods that complement leisure. This is corroborated by the observation that goods bought with disposable income – from barbeque grills, fishing gear, and photography gadgets to home electronics, mountain bikes, and vacation trips – have been evolving towards greater variety, quality, sophistication, expensiveness on the high end and affordability on the low end.

The pursuit of stimulation and avoidance of boredom are not the only motives that generate demand as disposable time and income rise. Another motive with deep psychological roots is social competition and status signaling. Veblen (1899) put it thus: "As increased industrial efficiency makes it possible to procure the means of livelihood with less labor, the energies of the industrious members of the community are bent to the compassing of a higher result in conspicuous expenditure, rather than slackened to a more comfortable pace." Since the higher conspicuous expenditure necessitates more labor to supply the conspicuous goods and services, there is a link to employment here as well.

There is a tradeoff between quantity and quality of leisure time. Working fewer hours gives a consumer more leisure hours but less income to spend on enjoying the leisure. In an empirical study of

the adoption of time-saving home appliances and home entertainment devices, Bowden and Offer (1994) found strong evidence that consumers prioritize quality over quantity of leisure. Their data shows that consumers adopted entertainment devices much faster than time-saving appliances, and often relied on interest-bearing credit which made the devices more expensive. Moreover, manufacturers obliged by producing increasingly more stimulating devices and content at a rate of innovation that exceeded that of time-saving appliances. These findings confirm that the pursuit of stimulation and avoidance of boredom are strong motives that create demand and thereby engender work to supply the products to meet that demand. The relevant tradeoff for an individual worker/consumer is not simply a choice between work hours and leisure hours, but between work hours and quality-adjusted leisure hours. It is rational for a worker/consumer to sacrifice some leisure hours to earn income that she can use to raise the quality of her remaining leisure hours.

Ironically, the work to produce leisure-complementing goods may be boring or otherwise unpleasant. Relief from boredom may have to be purchased with boredom. But it is worth it, as long as the boredom at work is more than compensated by using the wages earned to avoid feeling bored and enjoy oneself more during one's time off.

Keynes (1930) was right in predicting the coming of a leisure-intensive economy. He was wrong in treating leisure as a residual outcome exogenous to the economic system. Keynes noted that not having work to keep oneself busy would be a psychological burden, but did not take the next step to ask how economic forces would address this burden. In particular, he did not take into consideration that leisure would give rise to demand and supply of new goods and services to get stimulation, avoid boredom, and engage in status signaling. In a leisure-intensive economy, many people work to enhance the leisure of others, while also enjoying their own leisure more thanks to the work of others. The possibility that the leisure economy may also be a busy economy was critically absent from Keynes' famous essay.

The rest of the paper is organized as follows. The next section provides an overview of the argument underlying our model. Section 3 presents a basic model that makes explicit how leisure time changes as labor productivity rises, taking into account the work needed to produce leisure-complementing goods. Section 4 extends the model to take into account the additional demand for essential goods arising out of leisure activities. Section 5 discusses the results and Section 6 examines a numerical example. Section 7 concludes. In lieu of a literature review, the Appendix summarizes relevant insights from "Revisiting Keynes" (Pecchi and Piga, 2008), a volume that gathers views from many economists on the question of why Keynes' labor-reduction forecast was off the mark.

2. Overview of the argument underlying the model

The global video game industry generates hundreds of billions of dollars in revenue and employs hundreds of thousands of workers to design, program, manufacture, market, and retail hardware and software. Producing some video games requires budgets and labor on par with constructing large buildings or manufacturing airliners. The existence of the video game industry is made possible by billions of consumers having enough disposable income and time to spend on gaming. People having

free time, and a preference to do something fun during that time, thus create work for those employed in the game industry. In incremental terms, this implies that an expansion in income and leisure, as might be caused by a rise in labor productivity, creates work in industries that help consumers enjoy leisure and avoid boredom.

We will examine the link between labor productivity and the demand for and supply of labor. Specifically, we will trace how an increase in leisure and disposable income due to a rise in labor productivity stimulates demand for goods and services to consume with the newly available time and money, which in turn stimulates additional demand for labor to supply those goods and services.

For example, if a new manufacturing technology allows factory workers to earn more and work less, some of them will travel more, which would require more transportation and accommodation, which would in turn require more labor at airports, airlines, hotels, and restaurants, as well as at the firms that are their suppliers. Therefore, the economy-wide reduction in working hours due to the new manufacturing technology would be less than the time it saves in factories. Due to this feedback loop, the effect of rising productivity on leisure is not straightforward.

Like Keynes, most models that have analyzed the effect of productivity growth on leisure treat leisure as an outcome only. By doing that, they implicitly assume that leisure time is spent outside the economic system, i.e., without spending money. Although chatting on street corners and other ways to spend leisure time for free do exist, basic psychological drives such as avoidance of boredom and pursuit of stimulation and pleasure make most people fill their time off with activities that do require expenditure. Instead of chatting on street corners, many prefer to chat in cafes staffed by other workers. By endogenizing leisure as a factor that influences demand for labor, our model brings this into focus.

Every modelling exercise must strike a balance between simplicity and realism. Our model lies towards the simple extreme. Primitive as it is, the model does the job of exposing the feedback from leisure to employment. Moreover, its simplicity makes the model useful for teaching purposes at the undergraduate level and in multi-disciplinary courses outside of the standard economics curriculum.

3. A basic model of productivity, leisure, and demand for labor

There are N identical agents in an economy. Each agent has T waking hours per month to divide between work and leisure. An agent works $\tau \geq 0$ hours and has $\lambda \geq 0$ hours of leisure, such that $\lambda + \tau = T$.

To live, an agent needs to consume "essential goods" which we will refer to as "potatoes." In particular, each agent needs T potatoes per month (i.e., one potato per hour, on average). We assume that agents cannot consume more potatoes, so the per-agent per-month demand for potatoes is inelastic:

$$f_p = T \tag{1}$$

On the supply side, we assume that if an agent works τ hours per month, he produces

$$q_p(\tau, k) = k\tau \tag{2}$$

potatoes, where $k > 0$ is a parameter describing the productivity of labor given the available potato production technology. Initially $k = 1$. Since $q_p\ (T,1) = T$, initially all agents spend all their time producing potatoes; nobody has any leisure.

Now, suppose an invention raises labor productivity to $k > 1$. Then, if all N workers were to continue to work as before, they would produce kNT potatoes per month. Assuming that the excess $(k–1)NT$ of potatoes cannot be stored or consumed, and that labor entails disutility, the agents work less. In aggregate, the agents work NT/k hours per month to produce the necessary and sufficient NT potatoes.

Without explicitly modeling prices, wages, and institutions affecting the distribution of work and products, we will assume that homogenous preferences and competitive forces result in an equalitarian equilibrium such that all agents work the same hours. Given potato production technology $k > 1$, each agent works $\tau = T/k$ hours and has $\lambda = (k-1)T/k$ hours of leisure.

To avoid boredom during their time off, agents engage in leisure activities such as travel, dining out, surfing, etc. To distinguish these from essential goods, we will refer to this kind of consumption as "gravy." To supply gravy goods requires labor – waiters in restaurants, drivers of tour buses, shapers of surfboards, etc. The demand for gravy creates demand for labor to produce it. The innovation that raised productivity of potato production thus created not only leisure but also a new sector in the labor market. Agents now have a choice of working in the potato or the gravy sector. We assume that each agent can only work in one sector. In particular, $m > 0$ agents choose to work in the gravy sector, while $n > 0$ agents remain potato workers, such that $n + m = N$.

To meet the aggregate demand for potatoes from all agents, each of the n potato workers must work τ hours such that:

$$Nf_p = nq_p(\tau, k) \tag{3}$$

which simplifies to

$$NT = n\tau k \tag{4}$$

Assuming that the disutility of labor is the same in both sectors, competitive equilibrium implies that potato and gravy workers work the same hours. If each agent works τ hours and enjoys λ hours of leisure, the total amount of leisure in the economy is $N\lambda$ hours per month. Let us assume that one hour of leisure gives rise to inelastic demand for one unit of gravy, i.e., $f_g\ (\lambda) = \lambda$. Furthermore, we assume that a gravy worker working τ hours per month produces

$$q_g(\tau, z) = z\tau \tag{5}$$

where $z > 0$ is a parameter describing the productivity of labor given the available gravy production technology.

To match the aggregate demand for and supply of gravy, we require:

$$Nf_g(\lambda) = mq_g(\tau, z) \tag{6}$$

which simplifies to

$$\lambda N = mz\tau \tag{7}$$

Solving (4) and (7) gives the equilibrium. In the equilibrium, the fraction of agents employed in the essential (potato) sector is

$$\frac{n}{N} = \frac{1+z}{k+z} \tag{8}$$

and the fraction of agents employed in the leisure (gravy) sector is

$$\frac{m}{N} = \frac{k-1}{k+z} \tag{9}$$

In the equilibrium, the fraction of available time agents spend working is

$$\frac{\tau}{T} = \frac{k+z}{k(1+z)} \tag{10}$$

and the fraction of available time agents spend as leisure is

$$\frac{\lambda}{T} = \frac{z(k-1)}{k(1+z)} \tag{11}$$

We will refer to this equilibrium as model 1. We will next incorporate into the model another important link that connects leisure and labor, and then proceed to analyze, compare, and discuss properties of the equilibria.

4. Additional demand for essential goods due to leisure

So far, we have been assuming that leisure creates demand only for leisure-complementing goods. However, leisure also stimulates demand for essential goods. For example, leisure travel requires fuel, which is an essential good. To incorporate this into the model, we will assume that leisure creates demand for both gravy and potatoes, and then track the implications for the additional potato and gravy labor needed to serve the demand stemming from leisure.

Specifically, let us assume that each agent demands $p > 0$ potatoes for each leisure hour, in addition to the 1 subsistence potato per hour that each agent needs to live. The per-agent per-month demand for potatoes is then

$$f_p(\lambda) = T + p\lambda \tag{12}$$

To meet this demand, the potato sector requires more labor. Specifically, to match the aggregate potato supply and demand requires

$$Nf_p(\lambda) = nq_p(\tau, k) \tag{13}$$

which simplifies to

$$N(T + p\lambda) = n\tau k \tag{14}$$

Solving (7) and (14) gives the equilibrium. In the equilibrium, the fraction of agents employed in the essential (potato) sector is

$$\frac{n}{N} = \frac{1 + z(1 + p)}{k + z(1 + p)} \tag{15}$$

and the fraction of agents employed in the leisure (gravy) sector is

$$\frac{m}{N} = \frac{k - 1}{k + z(1 + p)} \tag{16}$$

In the equilibrium, the fraction of available time agents spend working is

$$\frac{\tau}{T} = \frac{k + z(1 + p)}{k + z(k + p)} \tag{17}$$

and the fraction of available time agents spend as leisure is

$$\frac{\lambda}{T} = \frac{(k - 1)z}{k + z(k + p)} \tag{18}$$

5. Equilibrium analysis

Let us examine the equilibrium derived in Section 4. In the limit, as the labor productivity in the potato sector rises, employment shifts entirely to the gravy sector

$$\lim_{k \to \infty} \frac{m}{N} = 1 \tag{19}$$

and the fraction of available time spent as leisure rises to a level determined by the labor productivity in the gravy sector:

$$\lim_{k \to \infty} \frac{\lambda}{T} = \frac{z}{1 + z} \tag{20}$$

Since the partial derivatives of (18) with respect to productivity parameters k and z are positive, leisure time is monotonically increasing in labor productivity of both sectors. Figure 1 shows potato sector employment share and Figure 2 shows leisure time, both as a function of productivity of potato production. Figure 3 shows leisure time as a function of productivity of gravy production.

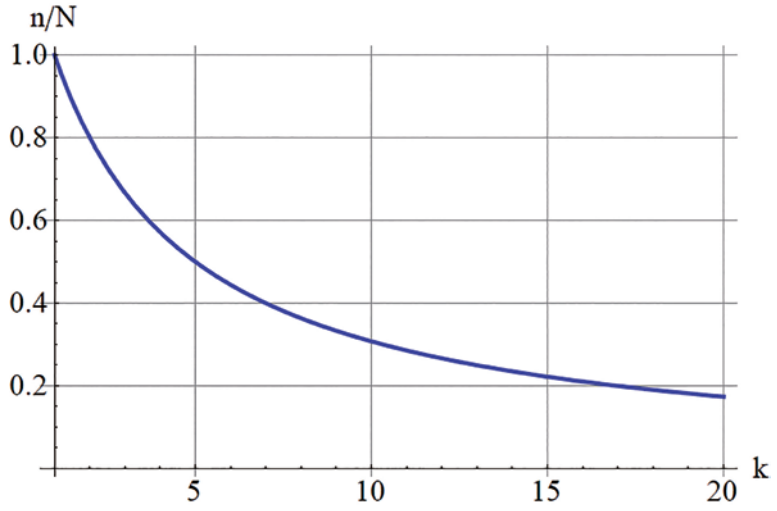

Figure 1. Fraction of agents employed in the essential goods sector as a function of labor productivity in the sector. Parameter values used to generate this graph were z = 2.5 and p = 0.2.

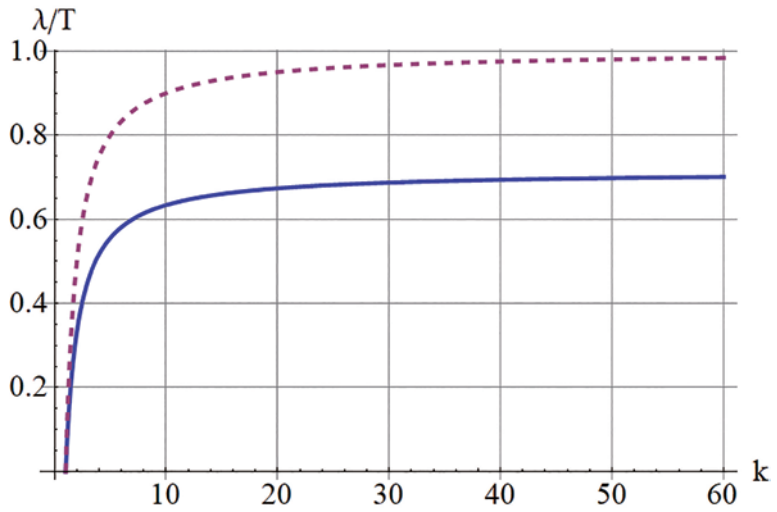

Figure 2. Fraction of time spent as leisure as a function of labor productivity in the essential goods sector. Parameter values used to generate this graph were z = 2.5 and p = 0.2. The dotted line on top shows how leisure grows according to Keynes' model that ignores the feedback from leisure to labor.

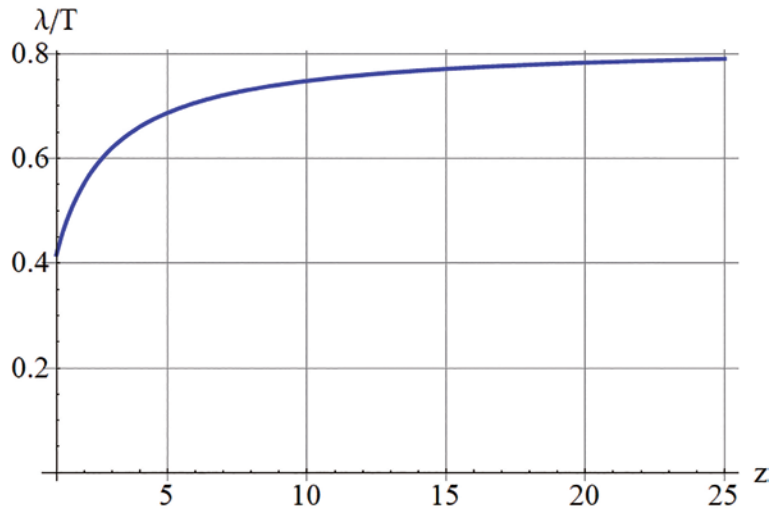

Figure 3. Fraction of time spent as leisure as a function of labor productivity in the leisure goods sector. Parameter values used to generate this graph were k = 6.5 and p = 0.2.

To see how gains in labor productivity are translated into leisure, let us look at the elasticity of leisure time with respect to the productivity parameters. The elasticity of leisure with respect to labor productivity in the essential goods sector is

$$\epsilon_{\lambda,k} = \frac{k}{\lambda}\frac{\partial \lambda}{\partial k} = \frac{k(1+z(1+p)}{(k-1)\big(k+z(k+p)\big)} \tag{21}$$

As shown in Figure 4, this elasticity is monotonically decreasing in k. In the limit as k decreases to 1, the elasticity is infinite. As k increases, the elasticity asymptotically approaches zero. Unit elasticity occurs when k satisfies $(k - 1)^2 (1 + z) = 1 + z (1 + p)$. Solving this condition for k tells us that leisure is unit-elastic with respect to labor productivity in the essentials sector when

$$k^* = 1 + \sqrt{\frac{1+z(1+p)}{1+z}}$$

Therefore, when potato productivity is low, leisure is highly elastic; but at high levels of potato productivity, leisure is inelastic. Additional gains in potato productivity are converted into progressively fewer hours of leisure.

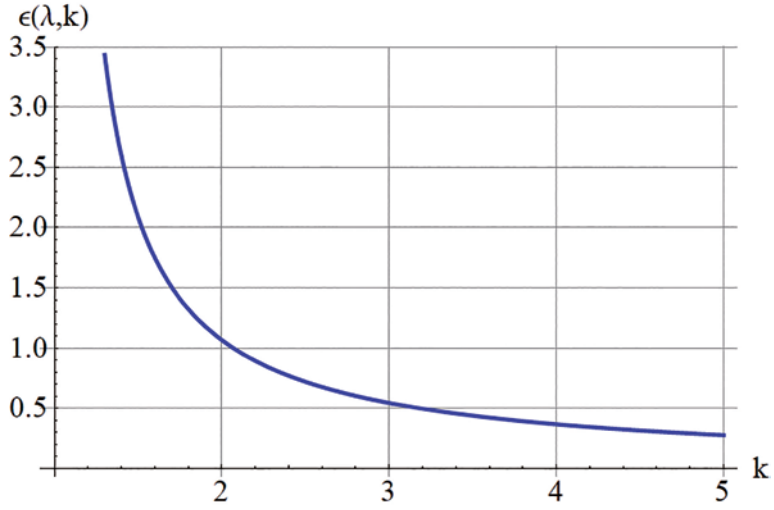

Figure 4. Elasticity of leisure time as a function of labor productivity in the essential goods sector. Parameter values used to generate this graph were z = 2.5 and p = 0.2.

The elasticity of leisure with respect to labor productivity in the gravy sector is

$$\epsilon_{\lambda,z} = \frac{z}{\lambda}\frac{\partial \lambda}{\partial z} = \frac{k}{k + z(k+p)}$$

This elasticity is less than 1 for all relevant values of the parameters, and is monotonically decreasing in z. As Figure 5 shows, leisure is always inelastic with respect to gravy labor productivity, and progressively so as gravy labor productivity rises.

Thus, the extent to which additional gains in labor productivity are translated into leisure depends on the extant level of productivity. At low levels of labor productivity in producing essentials, a productivity-raising innovation leads to a big expansion of leisure. However, when labor productivity in producing essentials is already high, further gains in labor productivity result in smaller gains in leisure time. At high levels of productivity, additional productivity gains in either sector translate into less and less leisure. As far as leisure time is concerned, there are diminishing returns to raising labor productivity.

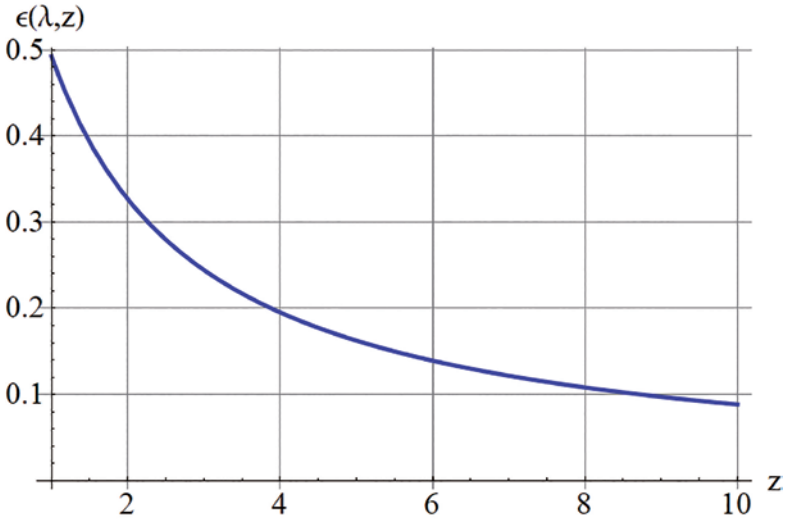

Figure 5. Elasticity of leisure time as a function of labor productivity in the leisure goods sector. Parameter values used to generate this graph were k = 6.5 and p = 0.2.

6. Numerical example

To get a better sense of the results discussed in Section 5, let us compare the models numerically using parameter values that correspond to the currently standard forty-hour workweek and to Keynes' prediction of the fifteen-hour workweek.

Keynes' prediction was based on the assumption that all labor time saved in production of essential goods becomes leisure time. As derived in Section 3, this means that, if essential goods productivity parameter is k, each agent works $\tau = T/k$ hours and has $\lambda = (k-1)T/k$ hours of leisure. As productivity k rises, leisure asymptotically approaches T (see Figure2). We will compare this Keynesian baseline to our models.

Based on the calculation detailed in Table 1, we will use $T = 420$ as the number of hours that each agent has available for work or leisure each month. Table 2 shows how these hours are allocated between work and leisure given the contemporary norm of a forty-hour workweek and given Keynes' predicted fifteen-hour workweek.

Table 1. Time available for work and leisure

hours per day		24	hours
daily hours for essential self-care (sleep, etc.)		10	hours
daily hours available for work or leisure		14	hours
days per month		30	days
monthly hours available for work or leisure	T	420	hours

Table 2. Allocation of time to work and leisure

		Current norm		Keynes baseline	
		hours	%	hours	%
work hours per week		40		15	
weeks per month		4.3		4.3	
work hours per month	τ	172	41%	65	15%
leisure hours per month	λ	248	59%	356	85%
total	T	420	100%	420	100%

Table 3 presents a comparison of the three models with plausible parameters values for labor productivity in the two sectors (k, z) and the demand for essentials stemming from leisure consumption (p). Given these parameter values, the baseline model corresponds closely to Keynes' prediction of a fifteen-hour workweek, whereas model 2 corresponds closely to the prevailing norm of the forty-hour week. Model 1 involves slightly less work than model 2.

Table 3. Comparison of models. "Baseline" refers to Keynes' prediction, "model 1" refers to the model in Section 3, and "model 2" to the model in Section 4.

		baseline	model 1	model 2
essential goods labor productivity	k	6.5		
leisure goods labor productivity	z		2.5	
demand for essential goods from leisure	p		0.2	
work hours per month	τ	65	166	172
leisure hours per month	λ	355	254	248
%work hours per month	τ/T	15%	40%	41%
%leisure hours per month	λ/T	85%	60%	59%
%workforce in essential sector	n/N	100%	39%	42%
%workforce in leisure sector	m/N	0%	61%	58%

To examine how gains in labor productivity affect leisure time, we increase the productivity parameters by ten percent and observe the resulting changes in equilibrium hours of work and leisure, as well as the distribution of labor between the two sectors. Table 4 shows the case of a ten percent rise in labor productivity of essential goods production. Table 5 shows the case of a ten percent rise in labor productivity of leisure goods production. Table 6 shows the case of a ten percent rise in labor productivity of both types of goods.

Table 4. Effect of 10% increase in labor productivity in essential sector

		baseline	model 1	model 2			
essential goods labor productivity	k	7.2					
leisure goods labor productivity	z		2.5		%change		
demand for essential goods from leisure	p		0.2		baseline	model 1	model 2
work hours per month	τ	59	162	167	-9.1%	-2.5%	-2.7%
leisure hours per month	λ	361	258	253	1.7%	1.7%	1.9%
%work hours per month	τ/T	14%	39%	40%	-9.1%	-2.5%	-2.7%
%leisure hours per month	λ/T	86%	61%	60%	1.7%	1.7%	1.9%
%workforce in essential sector	n/N	100%	36%	39%	0.0%	-6.7%	-6.4%
%workforce in leisure sector	m/N	0%	64%	61%	0.0%	4.3%	4.7%

Table 5. Effect of 10% increase in labor productivity in leisure sector

		baseline	model 1	model 2			
essential goods labor productivity	k	6.5					
leisure goods labor productivity	z		2.8		%change		
demand for essential goods from leisure	p		0.2		baseline	model 1	model 2
work hours per month	τ	65	159	165	0.0%	-4.1%	-3.8%
leisure hours per month	λ	355	261	255	0.0%	2.7%	2.6%
%work hours per month	τ/T	15%	38%	39%	0.0%	-4.1%	-3.8%
%leisure hours per month	λ/T	85%	62%	61%	0.0%	2.7%	2.6%
%workforce in essential sector	n/N	100%	41%	44%	0.0%	4.2%	11.3%
%workforce in leisure sector	m/N	0%	59%	56%	0.0%	-2.7%	-7.4%

Table 6. Effect of 10% increase in labor productivity in both sectors

		baseline	model 1	model 2			
essential goods labor productivity	k	7.2					
leisure goods labor productivity	z		2.8		%change		
demand for essential goods from leisure	p		0.2		baseline	model 1	model 2
work hours per month	τ	59	155	160	-9.1%	-6.7%	-6.5%
leisure hours per month	λ	361	265	260	1.7%	4.4%	4.5%
%work hours per month	τ/T	14%	37%	38%	-9.1%	-6.7%	-6.5%
%leisure hours per month	λ/T	86%	63%	62%	1.7%	4.4%	4.5%
%workforce in essential sector	n/N	100%	38%	41%	0.0%	-2.6%	-6.2%
%workforce in leisure sector	m/N	0%	62%	59%	0.0%	1.7%	4.9%

7. Conclusion

We theoretically examined the effect of rising labor productivity on leisure time in a two-sector pure labor economy. We used a model that takes into account the feedback from leisure to production. Specifically, our model allowed us to trace how greater productivity in the essential goods sector expands leisure time, which in turn expands consumption of both leisure and essential goods, which in turn affects employment and working time in both the essential and leisure goods sectors.

We found that productivity growth does lead to more leisure time, but the rate at which productivity is translated into leisure is not nearly as fast as Keynes had figured under the assumption that leisure is solely a residual outcome rather than also being a cause of demand and labor.

The model has implications relevant to the contemporary debate over how the increasingly sophisticated robots and artificial intelligence algorithms will affect the economy. If job automation due to robots and AI is concentrated in the essentials sector, the share of employment in the leisure sector will rise. This has been the case for many technologies introduced since the Industrial Revolution. However, AI and robots are also capable of automating certain jobs in the leisure sector. For instance, AI appears headed towards a level of sophistication that would allow it to produce movies and video games, the creation of which currently requires much human labor. In the extreme case of AI and robots automating almost all the jobs in both the essentials and leisure sectors, distributing income through compensating labor would no longer broadly distribute purchasing power. That, in turn, would undermine the ability of firms to sell both essential and leisure goods. Elaborating our model to explicitly consider wages and prices may lead to additional insights into the interplay between productivity and leisure as new technology automates most jobs.

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Appendix. Relevant insights from "Revisiting Keynes"

The question of why Keynes' forecast for the reduction in working time was wide off the mark has received sustained attention by sixteen economists who contributed to "Revisiting Keynes" (Pecchi and Piga, 2008). This appendix reviews some of their points which are particularly relevant to the present paper.

Freeman (2008) brings up the role of income disparities and argues against lumping all labor together regardless of level of pay or prestige. He points out that many of the esteemed and highly-paid struggle with overwork whereas many of the low-paid struggle with finding enough work. He also emphasizes how pay disparity serves as an incentive to work more to gain promotions, noting that "in the United States, workers in occupations with high inequality work more hours than those in occupations with low inequality." Freeman describes this as "a tournament style economic system that gives the person who puts in an extra hour of work a potentially high return" and points out that "advanced countries with higher inequality exhibit greater hours worked and a greater desire by the population to work more hours."

Zilibotti (2008) explores an alternative way to account for working time. Instead of focusing on working hours per week, he looks at the fraction of waking hours in a person's life that the person spends in paid employment. Given the expansion of education and the concomitant delay of entry into the full-time labor force, and given the changes in life expectancy and retirement age, Zilibotti's lifetime accounting method is a more accurate way to compare trends in working time over the decades since Keynes wrote his essay. Zilibotti notes that "the fraction of an individual's lifetime spent on working activities is much smaller today than in 1930." He recasts Keynes' forecast into percent of lifetime spent at work and then compares it to a similar accounting of working norms in Western Europe and the U.S. around 2000: "In Keynes' forecast, the average individual works 7.6 percent of her/his lifetime

endowment. In contrast, in my 2000 real world analysis, she/he works 14.4 percent of her/his lifetime in the thirty hours workweek case, and 18.3 percent in the thirty-eight hours workweek case." Thus, using the more accurate way to account for working time, Zilibotti confirms that Keynes' forecast was very far from reality in advanced Western economies as of 2000.

In a brief essay, Solow (2008) makes a point that is close to the argument developed in this paper: "Maybe, in common with economists generally, he [Keynes] thought of 'leisure' as an alternative to consumption, whereas in reality it is an adjunct to consumption. You can listen to music on an expensive piece of electronics, read on an expensive computer screen, play with expensive golf clubs, drive a classy car or a not-so-classy motor yacht."

Becker and Rayo (2008) make a similar point but without reference to leisure and the labor needed to produce leisure-complements: "He [Keynes] correctly emphasized the future importance of technological advances that would raise the productivity of labor and capital, but he essentially ignored the potential creation of consumer goods that would continue to motivate individuals to have enough earnings to afford them."

Becchetti (2008) concurs with the premise of this paper, insisting that "… we need professionals to organize the fruition of our leisure (i.e., leisure and entertainment is an industry in itself creating many jobs)." Using manufacturing as a proxy for essential goods and taking services as a proxy for leisure-complements, Becchetti claims that Keynes was not too far off the mark if his forecast were to be interpreted as applicable only to the manufacturing sector. Becchetti sees the shrinking of manufacturing in the West as a sign of less labor being deployed to supply essentials. But this ignores the shift of manufacturing jobs to Asia and the fact that many manufactured goods are leisure-complements whereas many services are not.