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Article

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Concept Paper

Basic Income with High Open Innovation Dynamics: The Way to the Entrepreneurial State

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Abstract: Currently, the world economy is approaching a near-zero growth rate. Governments should move from a market-failure-oriented to a system-failure-oriented approach to understanding this problem, and transform to an entrepreneurial state to motivate the Schumpeterian dynamics of open innovation. We want to answer the following research question in this study: “How can a government enact policies to conquer the growth limits imposed on the economy by inequality or the control of big businesses?” First, we conducted a literature review to establish the concept of building a causal loop model of basic income with open innovation dynamics. Second, we built a causal loop model which includes basic income and all factors of open innovation dynamics. Third, we proved our causal loop model through a meta-analysis of global cases of basic income. Our research indicates that reflective basic income with permissionless open innovation, capital fluidity, a sharing economy, and a platform tax can motivate open innovation dynamics and arrive at a method by which an entrepreneurial state can conquer the growth limits of capitalism.

Keywords: basic income; open innovation dynamics; permissionless open innovation; capital fluidity; sharing economy

1. Introduction

1.1. Growth Limits of Capitalism

At the present moment, the global economy is approaching a near-zero growth rate. What are the problems which trigger the growth limits of capitalism? First, we cannot escape the high unemployment rate of most industrialized OECD countries, in addition to the increasing unemployment rate of China, India, Brazil, and other large under-developed countries. As shown in Figure 1, youth unemployment is dramatically increasing, and the future of employment and jobs are susceptible to computerization due to the arrival of the 2nd machine age [1,2].

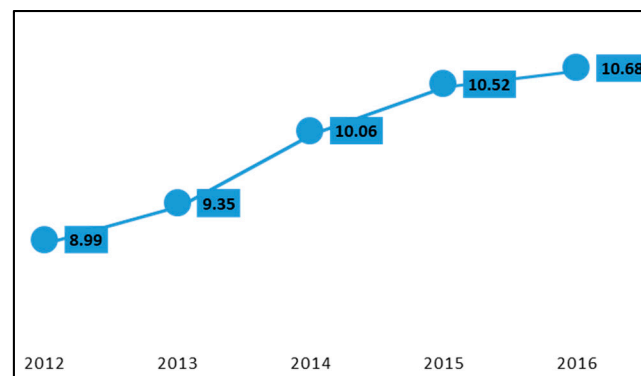


Figure 1. Youth unemployment rate trend.

Second, high inequality between the rich and the poor, which is continuously increasing, is another growth limit of capitalism, because the decrease in consumption by the major poor class will diminish the effective demand in the market [3]. Thus, the price of inequality is the decrease of the global growth rate [4]. The wealthiest one percent of individuals globally decreased from 388 members in 2010 to just 62 in 2015; therefore, the very richest became even richer relative to others who were also, by any sensible standard, very rich [5,6].

Inequality is not just between individuals but also between nations. Industrialized countries, by “kicking away the ladder”, pursued historical development strategies of bad Samaritans, continuously threatening the developing world [7,8]. For developing states, policy development and obtaining organizational and human resources are becoming hot issues after their ladders to economic growth were “kicked away” by industrialized countries [9]. In the case of Korea, the Chaebol system, which governs firms with minority stock holdings, has been exaggerating the inequality in the Korean economy and motivating market failure [10,11].

The economy can grow when its dynamic cycling is maintained [12]. Dynamic capitalism, which is from Schumpeter’s new combination or creative destruction theory, conflicts with general equilibrium economics [13,14]. In the same context, Mark, Keynes, and Minsky also paid attention to the instability of the capitalist growth process and the role of government [15,16].

Macro economies such as national innovation systems (NISs), regional innovation systems (RISs), or sectorial innovation systems (SISs), consist conceptually of the cyclical dynamics of three factors: 1) open market innovation by small or medium enterprises (SMEs) or start-ups; 2) closed open innovation by large businesses; and 3) open social innovation [17,18]. These Schumpeterian dynamics of open innovation, or entrepreneurial cyclical dynamics, mature with the growth of closed open innovation, and the domination of these dynamics by large corporations, as shown in Figure 2. The dominant controlling power of big business at the mature stage can completely control open social innovation, or open market innovation, and lead to a decrease in the growth rate of any NIS if the government does not control the dominant power of big business—for example, by not penalizing or charging big business for high internal reserves [18]. For example, Apple, the world’s richest company and the dominant power in the smart phone sector, went from value creation to value extraction by buying back shares, along with several other methods for maximizing shareholder value [5,19].

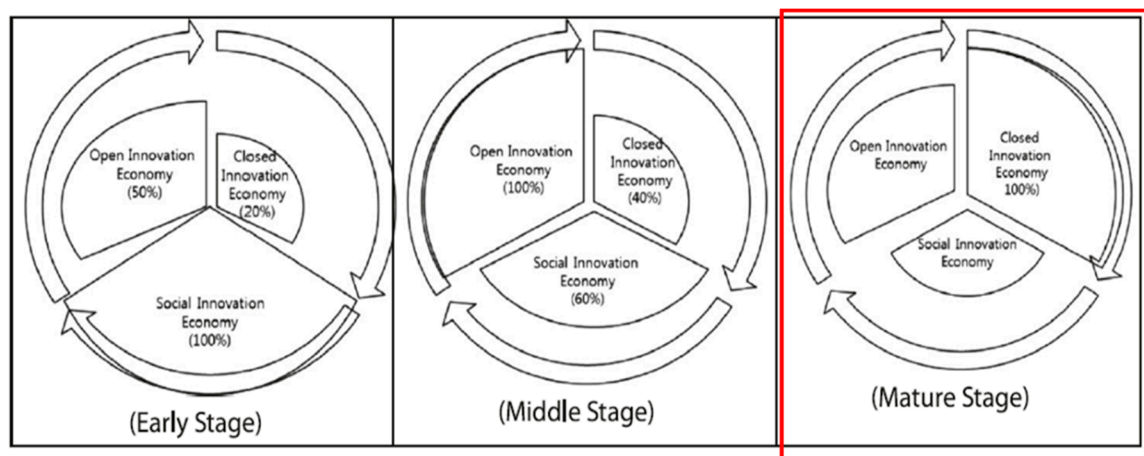


Figure 2. Life cycle of dynamics of open innovation. Source; modified from [17], Figure 6).

Governments should move from market failure treatment through system failure treatment, and to an entrepreneurial state to motivate the entrepreneurial dynamics of open innovation [20]. Most of all, in the era of the “end of work”—that is, the decline of the global labor force and the dawn of the post-market era—the role of the entrepreneurial state is becoming more important [21]. In addition, at the appearance of the sharing economy, the benefits of existing firms and the dominant state of big business are deterring the dynamics of open innovation [22,23].

1.2. Research Question and Research Method

In this study, we sought to answer the following research question:

“How can a government enact policies to conquer the growth limits imposed on the economy by inequality or the control of big businesses?”

We used several research methods in this study. First, we conducted systemic and interactive literature reviews to develop a conceptual model of government’s role in conquering the growth limits of capitalism [24,25]. Second, we ran a thought experiment to develop a causal loop model to conquer the growth limits of capitalism. A causal loop model is a kind of system dynamic modeling method based on a thought experiment without simulation to develop a sufficient theory or dynamic causal loop relations [26,27]. Third, we made meta-analyses of cases which could prove the causal loop model in addition to evaluating the causal loop model with additional literature reviews [28,29]. The meta-analysis included statistical analyses and qualitative analyses together of basic income cases from diverse countries from Europe, the U.S, Canada, and South America, in addition to Korea during the past two centuries.

The objective of this study was to find a way to conquer the growth limits of capitalism, which are based on high unemployment and a continuously increasing unemployment rate, as well as the enlarging inequality between the rich and poor classes as a result of government actions or policies.

2. Basic Income as the Engine of Open Innovation Dynamics

2.1. Definition of Basic Income

Basic income is a kind of periodic cash payment to all individuals without wealth investigation, or regardless of a person’s willingness to work [30,31]. Basic income has essential concepts such as universality, unconditionally, individual base, frequency/duration, and cash transfer [32,33]. However, there is no agreement regarding the adequacy of basic income. Basic income is a kind of capitalist road to communism, and is a simple and powerful idea for the 21st century when capitalism has yielded a continuous high unemployment rate and skyrocketing inequality [31,34].

Basic income is a way to democratize citizenship because it is given to all citizens [35]. It also gives all citizens real freedom, because basic income allows citizens to do what they want with their budgets to some degree [36,37]. In other words, basic income recognizes citizens' rights to common goods, natural resources, or social assets, in contrast to social welfare systems [38,39].

We define basic income as a periodic cash payment to all citizens without any conditions or requirements. However, we agree on diverse basic incomes based on citizen age and location. Further, we do not require the adequacy of basic income because it cannot be measured objectively.

2.2. Philosophical Foundation of Basic Income

Van Parijs proposed “real freedom for all” as the foundational concept of basic income because it can justify capitalism [36]. In addition to this, he argued that basic income is the ethical foundation for a radical reform [40]. This perspective treats basic income as a republican right [41].

According to another opinion, basic income is a method to come to true social justice because the wealth of society is itself social or organizational [42]. Liberal equality or republican liberty perspectives are also similar to this idea, in that social justice is a kind of liberal equality [43].

Third, basic income is treated as the most effective way to decrease the poverty worldwide. That is, basic income can let people in modern society conquer the poverty trap more efficiently compared to social welfare systems [33].

After setting the 8-h workday rule of the Wagner law in 1935, and setting the 40-h work week by the Fair Labor Standards act in 1938, the U.S. economy succeeded in great growth—that is, The Great Leap Forward from 1930 to 1970–80 [44]. However, in the 21st century, the U.S. and nearly all OECD countries are arriving at growth limits, or are seeing zero growth rates [45]. For the sustainability of capitalism, we need new standards or rules which will conquer the price of inequality, and the great divide [4,46]. In addition, with the appearance of the platform economy, on-demand economy, or gig economy, jobs are disappearing with the emergence of high unemployment rates, and nonstandard employment by crowd work, or on-demand work via apps is becoming more common [47–49].

Therefore, we propose the sustainability of capitalism as the philosophical foundation of basic income. Basic income with additional policies or economic conditions such as permissionless innovation, high capital fluidity, or sharing economy will motivate the cyclical dynamics of open innovation. In the 21st century, the quality of employment is decreasing, and the amount of employment is diminishing with the appearance of second machine age, or the 4th Industrial Revolution, as the new critical point or singularity [2,50,51]. Therefore, the cyclical dynamics of open innovation in national, regional, or sectorial innovation systems need a new standard such as basic income which is similar to the 8-h workday or 40-h workweek implemented in the 1930s. Because basic income gives non-conditional minimum incomes to all people, it becomes a kind of buffer by which people endure income instability, and let an independent businessman, labor union, capital–labor partnership, etc. have greater entrepreneurship [52].

2.3. Budget for Basic Income

Friedman, who became the president of Mont Pelerin Society in 1970 after Friedrich Hayek from 1947 to 1970, proposed that the market is truth and perfect [53,54]. Though the growth rate of the economy over the past 200 years in the capitalist global economy was under 2%, the rate of revenue of capital in the same period was 4%–5%. So, Piketty proposed the non-conditional capital tax [3,55].

However, diverse budgets for basic income were proposed, which were not limited in capital. For example, a 15-cent tax for 1 tonne of CO₂ could be a source of \$811 basic income per house [56].

Second, like the “basic rent” concept of Tomas Pain, or the real estate rental tax of Henry George, the land value tax has also been proposed for the budget of basic income [42,57,58].

Third, another new funding source for basic income through taxing on data mining, or sharing platforms such as Facebook, Google, Amazon, Twitter, Uber, or Airbnb was recently proposed [59,60].

Fourth, a freedom dividend based on value-added tax was proposed. Andrew Yang suggested that all U.S.A. citizens should be given \$12,000 per year—i.e., universal basic income funded by the value-added tax, which is currently zero in U.S.A [61]. One modeling study on the \$12,000 universal basic income announced that it would permanently grow the economy by 12.56%–13.10% in addition to increasing employment by 4,500,000–4,700,000 jobs [62]. The expenditure tax, which is taxed on all individual incomes except basic savings in a given period, is also a kind of value-added tax. This idea is rational at least in the U.S.A. because the global economy is moving from a labor-based system to a consumption-based system.

Fifth, several additional capital taxes such as wealth tax, corporate tax, inheritance tax, finance transaction tax, and robot tax have been proposed [42]. The super-Tobin tax, which is taxed on all online transactions, also belongs to this category.

Sixth, sovereign wealth funds accumulated from natural public assets such as the Alaska forever fund, or social public assets such as a frequency band tax, could serve as the budget of basic income [63,64]. Friedman's negative income tax, or universal basic income with flat tax by Simon belong to this category [65–67].

We propose reflective basic income, which is based on diverse additional surplus of capital of modern capitalism (Figure 3). The additional surplus of capital means the surpluses of capital which should not be distributed to private capital owners because of the limited contribution of the privately owned capital. If we search for examples of additional capital surplus, there are 1) the expensive rent fee of real estate near subway stations; 2) the high revenue of sharing economy platforms such as the Android app store, Apple app store, Amazon platform, Airbnb platform, Uber platform, Google search platform, Facebook, Kakao platform etc.; 3) tax on high corporate income, or overlarge internal reserves of big businesses which cannot be distributed to the big business without the sacrifice of small firms in the value chain; 4) tax on high inheritance which is more than can be distributed to individuals; 5) financial transaction tax which is taxed on the irrational overlarge revenues of finance industries such as fund managers, hedge funds, stock trades, support for venture firms to be listed on the stock market, etc.

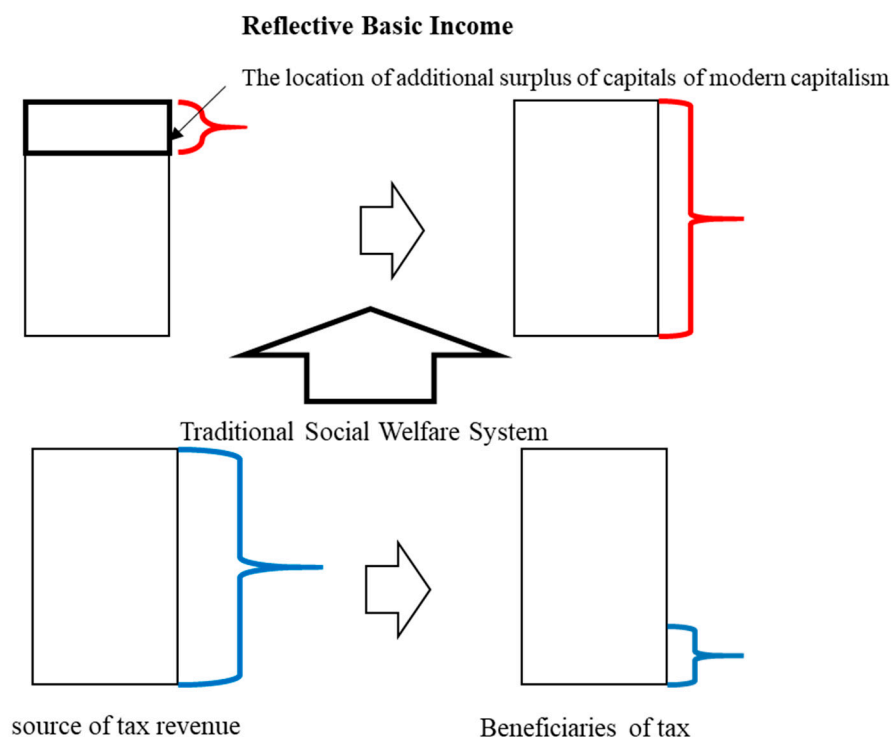


Figure 3. Reflective basic income; source of tax revenue and beneficiaries of tax.

Contrary to traditional social welfare systems, reflective income systems have limits in the sources of tax revenue, and are universal in the beneficiaries of the tax (Figure 3).

2.4. The Effect of Reflective Basic Income on Open Innovation Dynamics

First, the dominant role of closed open innovation will decrease because reflective basic income receives funding from the location of additional capital surpluses from modern capitalism in the short or medium term (Figure 4). However, with the increase of the speed of open innovation dynamics after the increase of open social and market innovation, closed open innovation will increase in the long term. Closed open innovation means, basically, closed innovation that sometimes includes partially open innovation.

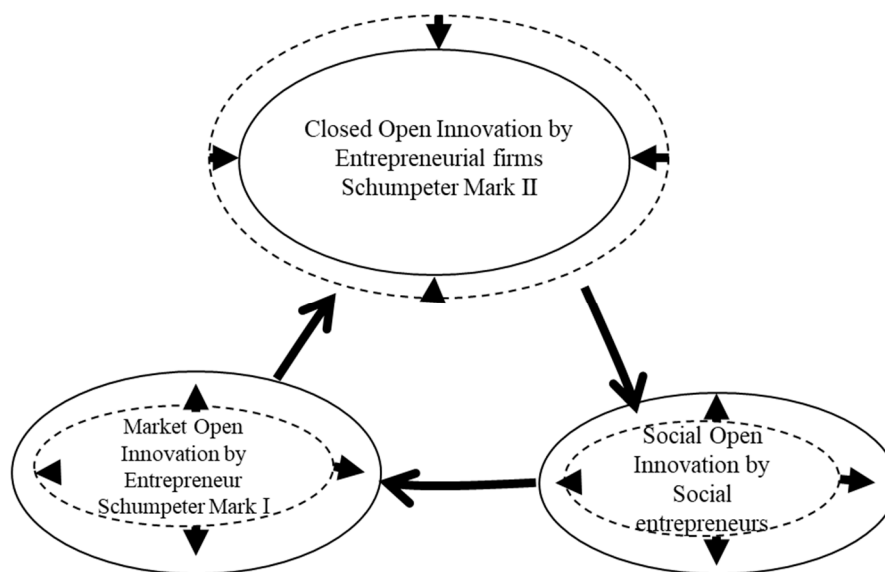


Figure 4. The effect of reflective basic innovation on open innovation dynamics.

Second, the amounts of open social innovation will increase with the increase in the speed of open innovation dynamics. The source of tax revenue for basic innovation is limited to the high-income class. More diverse social entrepreneurs can appear in this situation because basic income lets people pursue more socially valuable occupations than just high-income salary.

Third, the increased consumption power of all classes by virtue of basic income in addition to the high Gini index of 80% of the low income class will increase the consumption of products from open market innovation SMEs or start-ups. So, open market innovation will increase and motivate the open innovation dynamics in interaction with open social innovation.

In the end, reflective basic income will increase open innovation dynamics with the increase of open social and market innovation. That is, reflective basic income increases the amount of economy (e.g., short- or medium-term open market innovation), as well as its quality (e.g., long-term closed open innovation).

3. Additional Conditions to Increase Open Innovation Dynamics by Reflective Basic Income

3.1. Permissionless Open Innovation

Many people who pursue valuable works based on basic income will try to produce new innovative products or services which have never existed, and have not just good market value but also potential as well as social value [68]. That is, the increase of real freedom by unconditional basic innovation in the economic system increases the dynamic efficiency of new combination between technology, and market, and let arrive at creative destruction [14,36].

There are several categories in market innovation, such as permissionless innovation, permissioned innovation, and the precautionary principle, in which permissionless innovation is the intermediary innovation or the third option after the permission or innovation model [69]. Permissionless innovation means that “experimentation with new technologies and business models should generally be permitted by default. Unless a compelling case can be made against a new invention, that it will bring serious harm to society, innovation should be allowed to continue unabated and problems can be addressed later” [70]. Among diverse technologies, permissionless innovation is now accepted much more in the internet of things and wearable internet sectors than in others [71].

Permissionless innovation is not an absolute position that denies the role of government, but is an aspirational goal that stresses the benefit of “innovation” [72]. That is, permissionless innovation with basic income can motivate open social innovation that increases diverse social values, and open market innovation which will foster many creative start-ups or SMEs.

We propose the permissionless open innovation area (POIA) which is smaller than the permissionless innovation area (PIA), as illustrated in Figure 5. The standard permissionless innovation area comprises cyberspace, the internet of things, wearable internet, etc., which are sectors of online or mobile areas. In addition to these standard permissionless innovation areas, we want to add open innovations such as merger and acquisition (M&A), technology licensing, joint ventures, partnerships, etc., as another condition of permissionless innovation. We call this the permissionless open innovation area (POIA) in Figure 5. With the appearance the 4th Industrial Revolution (i.e., the 2nd IT revolution), online or mobile sectors increased from A to B in Figure 5 and so the standard permissionless innovation area also increased [51]. However, even though open innovation increased from α to β with the appearance of the knowledge-based economy (i.e., cognitive capitalism), a closed innovation area remains in the PIA [73]. These firms will pursue closed innovation without collaboration with other firms in online or mobile sectors. The reason we excluded these firms from PIA is that they did not have chances to show the results of their own innovation from the perspective of outside of the firm in advance.

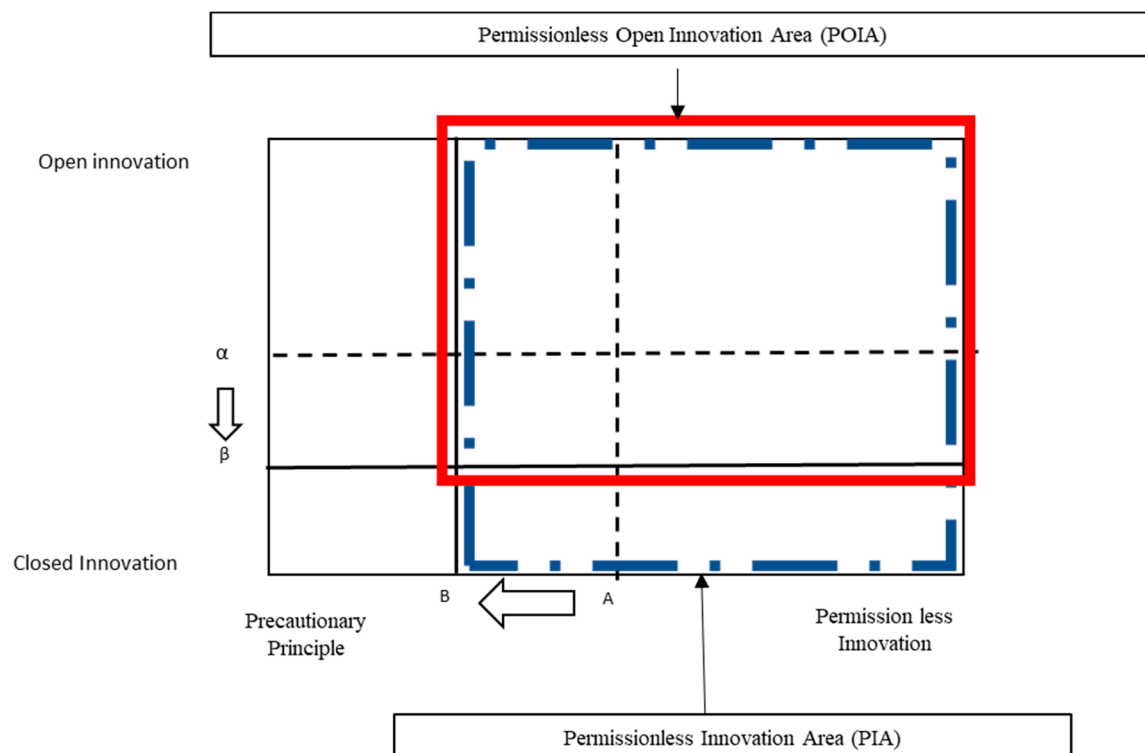


Figure 5. Reduction of Permissionless Innovation Area by adding Open Innovation.

Public agencies and firms also go outside the boundaries of the organization to find solutions to problems and to hand ideas off to partners to implement open innovation in the public sector (e.g., citizen participation) [74,75]. So, permissionless open innovation covers not only the private sector, but also the public arena. Therefore, the ability of public policy to influence open innovation such as in education and human capital development, financing open innovation, adopting a balanced approach to intellectual property, promoting cooperation and competition, and expanding open government should be considered when we construct POIA [76].

As with the PIA, in the POIA, unless a compelling case brings serious harm to society, innovation should be allowed to continue with the condition that problems which arise in the POIA can be addressed and remedied later.

In addition, the knowledge diffusion processes can be considered for full comprehension of the innovation framework, such as the effects of innovation on employment, the contribution of R&D to productivity growth, or the importance of geographic and technological proximity in spillover [77–79].

3.2. High Capital Fluidity for Motivating Not Financialization But Destructive Innovation

Henry Chesbrough proposed several open innovation policies which are financing open innovation in the European Union, such as 1) the funding chain including the increase of the pool of funds available for venture capital (VC) investment; 2) supporting the formation of university spin-offs to commercialize research discoveries; 3) shifting support from national champions towards SMEs and start-up companies; and 4) promoting spin-offs from large companies [76]. In a capitalistic economy, capital is the basic source of diverse motilities such as social mobility, education, health, safe and stable work, status, power, and social integration [80].

When the economic system generates evolution and economic development, the role of money and banking in the process of evolution through high capital fluidity for destructive innovation is essential [81]. Capital is a kind of lever or method for entrepreneurs to control production resources, products, or labor, and/or to motivate new combinations—that is, innovation which combines factors in a new way [81]. The essential function of credit which is based on capital consists of enabling the entrepreneur to withdraw the producers' goods which she needs from their previous employments, by exercising a demand for them, and thereby to force the economic system into new channels [12].

However, with the appearance of casino capitalism, the real economy is being financialized with frequent share buy-backs of firms to maximize shareholder value (MSV), the retreat of patient capital with the principal–agent problem in public companies, or short-termism and unproductive investment of capital in firms not for all agencies but for only shareholders [5]. Financialization can be defined as “the increasing role of financial motives, financial markets, financial actors and financial institutions” [82]. Financialization with securitization will decrease labor compared to capital with deterioration of the alienation of labor [83]. If the high financialization situation of firms is maintained with the introduction of reflective basic innovation, basic income will also be obtained by the firms which pursue not value creation but value extraction [20].

The financial requirement of open social innovation, or start-ups in open market innovation, may be modest. However, the scaling of an enterprise whose business model shows signs of success requires large infusions of cash to enable it to cross what has come to be called “the value of death” [19]. That is, the motivation of capital fluidity in addition to the introduction of basic income is required to maximize open innovation and new combination.

The increase of capital fluidity for triggering open innovation dynamics will include by following concrete factors.

- i. Increase the amount of venture capital;
- ii. Set up the securitization standard and restrict it at some rational level;
- iii. Restrict the share buy-back;
- iv. Restrict pursuing the short-term benefit maximization of firms;

- v. Restrict the internal reserve of firms at some rational level;
- vi. Motivate the financial supports to increase M&A, technology licensing, spin-offs, and diverse open innovation strategies.

3.3. Moving to Sharing Economy with Platform Tax and Open Innovation Ecosystem

A sharing economy can be defined as the practice where consumers grant each other temporary access to their under-utilized physical assets or idle capacity, possibly for money [60,84]. Arun Sundararajan describes the sharing economy as an economic system with the following five characteristics: largely market-based; high-impact capital; crowd-based “networks” rather than centralized institutions or hierarchies; blurring lines between the personal and the professional; and blurring lines between fully employed and casual labor, between independent and dependent employment, and between work and leisure [85].

With the appearance of the sharing economy alongside the melting of commerce and community, many diverse traditional industries such as automotive, hotel, restaurant, bike, office, kitchen, etc. are in a situation of dramatic change [85]. Sharing economy platforms are increasing suddenly in almost all industries, such as car rental, risk capital intermediary, corporate services, personal services, diversified labor, transportation, healthcare, retail, hotels, food, banks, etc. [85].

Collaborative consumption (CC) in the sharing economy is motivated by many factors, such as environmental sustainability, the enjoyment of co-consuming, the economic gains of sharing, etc. [23]. However, the sharing economy can trigger several new problems, such as the appearance of monopolistic super-platforms, independent workers under dependent contractors, or the shifting landscape of regulation and the erosion of consumer protection [60,85]. That is, things like 1) unregulated marketplaces such as risk transference, unfair competition, tax avoidance; 2) reinforcing neoliberalism with corporate co-option or lack of concern with sustainability; or 3) incoherent innovation such as innovation that has little to do with sharing, or confusing terminology, can occur [86]. Therefore, several ideas such as democratizing the ownership and governance of the platform or platform taxes have been proposed as ways to maximize the sharing value and control its negative effects [87].

Even though the decline of the global labor force and the dawn of the post-market era with the appearance of the second machine age, different types jobs could increase in the sharing economy if reflective basic income is provided [2,21].

We propose the initialization of several policies for the sharing economy with the introduction of reflective basic income, as follows:

- i. Introducing a sharing platform tax which will be fully used for the budget of basic income;
- ii. Institutionalizing the participation of peers in social sharing platforms;
- iii. Motivating diverse social sharing platforms as a social open innovation business model ecosystem;
- iv. Motivating permissionless open innovation of market sharing platforms.

4. Discussion: Casual Loop Modeling and Meta-Analysis

4.1. Causal Loop Modeling of Open Innovation Dynamics with Reflective Basic Income

We set up a clear system dynamic causal loop model of government’s role to conquer the growth limits of capitalism from reflective basic income to permissionless open innovation, high capital fluidity, and social economy, not for financialization but for destructive innovation (Figure 6).

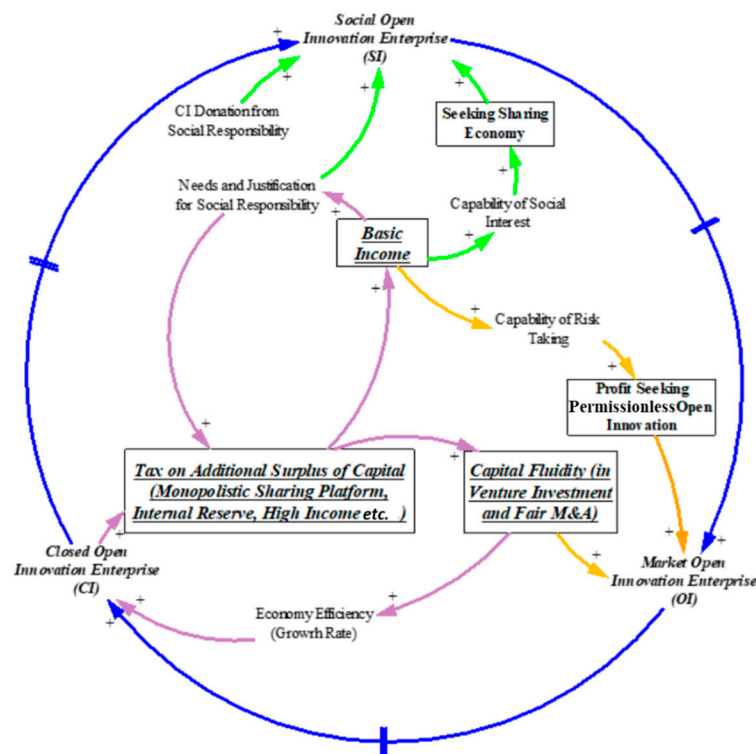


Figure 6. Causal loop modeling of government's role in motivating open innovation dynamics.

Basic Income can come from a basic income tax which consists of taxes on high wealth, high internal reserve, or monopolistic sharing platforms such as Uber, Amazon, Google, Apple music, Netflix etc. Basic Income can directly promote two important entities of entrepreneurial cycles: “social open innovation enterprise” (SI) and “market open innovation enterprise” (OI) [18].

The first direct effect of basic income is on open social innovation, as follows.

Basic Income ➡ Capability of Social Interest ➡ Seeking Sharing Economy ➡ Open Social Innovation Enterprise (SI).

Another direct effect of basic income is on open market innovation, as follows.

Basic Income ➡ Capability of Risk Taking ➡ Permissionless Open Innovation ➡ Market Open Innovation Enterprise (OI).

“Capital fluidity” can be gained by active and free-flowing investment to ventures and fair and active M&A to ventures and SMEs by big companies. Especially, “fair and active M&A” to ventures and SMEs are important in countries that suffer from too much concentration in big closed open innovation companies, such as Korea. Capital fluidity can directly promote OI, because it will give more access to ventures and SMEs with necessary capital for their business setup. Capital fluidity can also directly promote Closed innovation, because capital fluidity will give more “efficiency to economy”, and thus a higher growth rate to the economy. Efficiency in economy and higher growth rate will also boost the growth of big business.

Two important factors of basic income and capital fluidity require government to make them possible and activated. First, basic income obviously needs a source of funding to be sustained.

Taxation on additional surplus capital (Tax ASC) such as sharing platforms, internal reserve, high income, etc. can be a good source of government funding that is necessary for basic income. Second, Tax ASC also enforces and promotes big companies and monopolistic platform companies (CI) to use their excessive capital in investing and having M&A into promising ventures and SMEs. This will increase capital fluidity, and especially in era of the 4th Industrial Revolution, this capital fluidity is most necessary in economic development. That is, Tax ASC is a driving force for capital fluidity. So,

government policies to obtain basic income funding and to increase the capital fluidity are crucial to remedy the failure of the national, regional, or sectorial innovation systems as the entrepreneurial state.

With these government roles (i.e., taxation on wealth, internal reserve, and monopolistic platform), basic income and capital fluidity can have a mutually reinforcing relation. In step one, reinforcement between tax on wealth, internal reserve, and monopolist platform and basic income occurs as follows:

(R-Tax-BI) Taxation on additional surplus capital (Tax ASC) ➡ Basic Income ➡ Needs and Justification for Social Responsibility ➡ Tax ASC.

In step two, reinforcement between tax on wealth, internal reserve, and monopolist platform and capital fluidity occurs as follows:

(R-Tax-CF) Taxation on additional surplus capital (Tax ASC) ➡ Capital Fluidity ➡ Economy Efficiency (Growth Rate) ➡ Closed Open Innovation Enterprise (CI) ➡ Tax ASC.

In step three, mutual reinforcement between basic income and capital fluidity occurs as follows:

(R-BI-CF) Basic Income ➡ Needs and Justification for Social Responsibility ➡ Taxation on additional surplus capital (Tax ASC) ➡ Capital Fluidity ➡ Economy Efficiency (Growth Rate) ➡ Closed Open Innovation Enterprise (CI) ➡ Tax ASC ➡ Basic Income.

So, if we build up enough government policies like increasing of capital fluidity, permissionless open innovation, and motivating of sharing economy, as policy leverage, the introduction of reflective basic income will motivate open innovation dynamics as in Figure 6. When any innovation system arrives at the growth limits with the maturation of the system at the end of permanent labor in the 4th Industrial Revolution, basic income with the required additional policies will become a good solution.

4.2. Meta-Analysis of Diverse Basic Income Policies to Confirm the Causal Loop Model

Five cases, in essence cases ①, ③, ⑤, ⑧, and ⑨ in Table 1, motivated the social open innovation belonging directly to the regions. The other four cases, ②, ④, ⑥, and ⑦ in Table 1, increased the market open innovation of the target regions according to meta-analysis of the original data. Even though there were not enough examples, according to the nine global cases of basic income history, the positive economic effects of basic income manifested in social welfare policy, which is paradox to redistribution [88].

Table 1. Summary of diverse basic income policies in global economic history.

Number Year	Name, Location (Nation)	Characteristics	Relation with Causal Loop Model
① 1795	Speenhamland system, UK	Giving poor classes and their family reimbursement of living cost until the minimum level.	Increased income and economy of UK rural area (20C evaluation).
② 1974–77	Mincome project, Canada	Dauphin county 1000 houses received \$19,000 (four people) basic income every year.	Motivated students to study hard. Never decreased the working time of the main workers of every house (men). Marriage postponed until employment dreams of workers realized.
③ 1984–	Alaska Permanent fund: AFD, USA	Giving all citizens in Alaska who were living there for more than 1 year, \$331.294 in 1984, \$2072 in 2015.	Alaska became the state with the lowest level of poverty in the USA. Increased the quality of life of citizens even though the basic income was insufficient.

Table 1. Cont.

Number Year	Name, Location (Nation)	Characteristics	Relation with Causal Loop Model
④ 1997–	Harrah's Cherokee Casino, USA	All Cherokee Indians, near 3000, each received \$500 in 1997, \$6000 in 2001. The amount increases every year.	Working harder than before the basic income. Crime rate decreasing. Good relationships developed between parents and children. Increased self-development.
⑤ 2003	Bolsa Familia Program, Brazil	Gave basic income and additional basic income to poor families, and more poor families. Until 2006, 25% of the population (1.1 million families) received this.	Population with political and financial fault was not expanded at all. However, had positive implications.
⑥ 2005	Homeless Task Force at the State of Utah, USA	Gave housing to the homeless.	Homelessness decreased by 74% in the state of Utah, and people developed self-capability. Budget to tackle the homeless problem in the state of Utah decreased.
⑦ 2008. 1	Omitara and Otjivero, Namibia	Gave money to individuals over 60 as basic income grants.	Increased labor income from \$267 to \$308. Income increased to 200% that without basic income.
⑧ 2009	London, UK	Gave 113 homeless individuals £3000 each in one year.	All paid attention to developing self-capability. Near all prepared their own house
⑨ 2016	SungNam City, Youth dividend, Korea	Givave 24-year-old youth \$250 every 4 months (total \$1000);(\$1 = 1000 won in local currency).	Motivated the activation of young generations. The youth used the money to develop their own skills and buy books.

Source: [42,54,88–91].

Six cases in the USA, UK, Canada, and Korea, including ②, ③, ④, ⑥, ⑧, ⑨ at Table 1, show us that the basic income in developed society especially allows receivers to develop the self-capability to start their own economic behaviors, or social-economic start-ups. That is, we can see the possibility of the entrepreneurship-motivating power of basic income from these cases.

These are proof of the causal loop model of government's role, including reflective basic income, permissionless open innovation, high capital fluidity for open innovation, and sharing economy motivation policies with a sharing platform tax.

So, our meta-analysis suggests that basic income with three additional policy leverages would motivate open innovation dynamics.

5. Conclusions

5.1. Main Finding, and the Value of This Research

Most of all, basic income with additional policy leverage can motivate open innovation dynamics and motivate economic growth according to our concept model of this research. The main finding of this study is the causal loop model building the system dynamics of basic income with permissionless

open innovation, sharing economy, and capital fluidity. From our literature reviews and thought experiment, we arrived at this causal loop model.

In the 4th Industrial Revolution of economic growth without employment, we have to consider new roles of government in motivating open innovation dynamics from the perspective of system dynamics. From this research, we could find new policy agendas such as the construction of a permissionless open innovation area, increasing capital fluidity for open innovation dynamics, and promoting the sharing economy with a sharing platform tax system, in addition to a reflective basic income system.

Finally, our research indicates that basic income can be introduced to increase open innovation dynamics in order to conquer the growth limits of capitalism in diverse innovation systems. The new value of basic income as a trigger of open innovation dynamics is one of our main findings.

5.2. Limits of This Research and Additional Research Targets

This study is in the concept model development step. So, as a next research step, the simulation of this model in addition to meta-analyses or surveys is required to increase the possibility of applying this model to the real world. By simulation, the relation between basic income and permissionless open innovation, basic income and capital fluidity, and basic income and sharing economy could be developed in sufficient detail according to concrete situation to accurately predict real-world outcomes. Additionally, reflective basic income needs to be tested in order to verify the real effects of motivating economic dynamics or redistributing wealth, and to compare it to the minimum income guarantee or other modern policies [92].

Tomas More proposed Utopia more than 500 years ago. The way to the entrepreneurial state will lead in the right direction in the concept model. This study is the compass which will take us to a new economic utopia. However, we should not stop develop voyage skills and detailed maps to arrive at the utopia successfully with more fascinating ways to entrepreneurial state.

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