



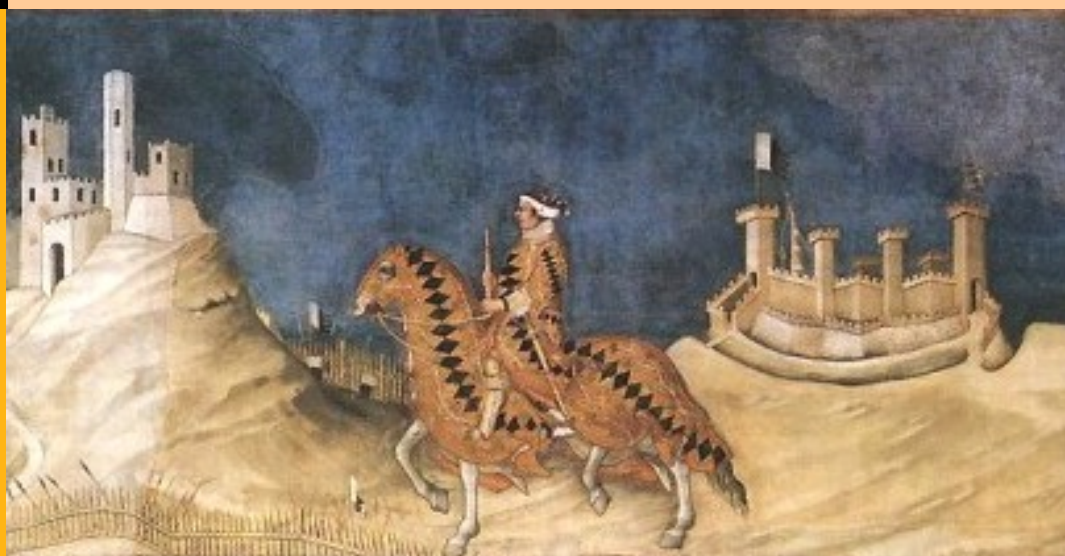
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Knowledge as a Global Common  
and the Crisis of the Learning Economy

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# **Knowledge as a Global Common and the Crisis of the Learning Economy\***

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*\*I thank Joe Stiglitz and David Donald for very useful comments*

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*This paper analyzes two interrelated problems characterizing a learning society. On the one hand, there is a tension between the non-rival nature of knowledge and its private appropriation. On the other hand, there is an institutional mismatch between the global public good nature of knowledge and the fragmentation of political power among different nations. We will argue that these two contradictions are a fundamental cause of economic stagnation and of inequality. The excessive monopolization of knowledge decreases the rate of growth but, at the same time, it increases the share of profits and shareholders' wealth. The discounted rents of privatized knowledge are a clear example of what Joe Stiglitz has aptly named capital-destructive wealth. Whereas the wealth (of few) increases, knowledge-capital decreases because its available uses are dramatically restricted.*

## Introduction.

Almost by definition, a move of knowledge from the public to the private sector increases inequality: everyone has equal rights of access to a public good. By contrast, the privatization of knowledge entails that only the monopolistic owner has full access to it. Increased rents are likely to cause both declining growth and increasing inequality.

Knowledge is by far the most important global common of humankind and, since the dawn of human history, its production and accumulation has been the distinctive feature of our species. However, its weight in production processes has greatly increased in recent decades. The roots of the modern knowledge-intensive society can be found in the Enlightenment<sup>1</sup> movement, which formulated the basic values of a liberal and democratic society:

*“The uber-ideology of the Enlightenment – the questioning of authority, and the belief in meritocracy, the notion that is possible and desirable, the respect extended to science and technology have created preconditions that are favorable to the creation of a learning society and to learning institutions (firms) within our society”.* (Stiglitz, Greenwald (2014) 11% Kindle version).

The increasing privatization of knowledge raises important political and moral issues. Moreover, the fact that learning may generate different competing theories (Elkana 2000) entails that we need procedures and institutions to falsify theories. This has important implications for the organization of a learning society.

In this paper, we will focus on the effects that learning has on inequality and development. We will try to analyze two main interrelated problems that characterize a learning society. On the one hand, there is a tension between the non-rival nature of knowledge and its private appropriation. On the other hand, there is an institutional mismatch between the global nature of the public good that is knowledge and the fragmentation of political power among

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<sup>1</sup> This view may understate the importance of the many early ‘enlightenments’ that had occurred in other parts of the world. The Italian Renaissance, which was accompanied by development of the first universities (Berman 1985), had given great impetus to natural science. Science and technology were also shining in China during different periods, especially the Song dynasty (Lin 2013). Confucian culture did not block but instead stimulated the advancements of science and technology, and the influence of Confucius on the French Enlightenment (in particular Voltaire) is a well-known early chapter in the history of global cultural interdependencies. However, there is no doubt that the Enlightenment marked an unprecedented acceleration of these processes and a dramatic break with unproven religious beliefs, vindicating the right of humans to learn without constraints and prejudices.

different nations. We will argue that these two contradictions can provide an explanation of economic stagnation and of inequality.

The structure of the paper is as follows. The next section focuses on the ways in which the institutions of a learning society deal with the two contradictions that we have considered. Section 3 examines the relation between the private appropriation of knowledge and inequality. Section 4 analyses the relation between the monopolization of knowledge and the recent dynamics of the global economy, which has witnessed the boom of the roaring nineties and, after that, several years of economic stagnation. Finally the concluding section suggests some possible policies aiming at a just learning society.

## **2) The Institutions of the Learning Society.**

The institutions by which learning activities are organized have much to do with the nature of knowledge - the fundamental input as well as the fundamental output of learning activities. In a famous passage, President Jefferson observed how knowledge is like the flame of a candle: other candles can be lit without decreasing the flame of the candle used to transmit the fire. In the language of economics, knowledge is a non-rival good: enlightening others does not decrease our light and, in this sense, the use by others of the same piece of knowledge occurs at zero marginal cost. While a piece of bread is a rival good that can be eaten only by one person, in the case of knowledge the gospel story of the multiplication of the loaves and fishes can become a real experience of ordinary life. Unsurprisingly, ever since Arrow's (1962) fundamental contribution, learning (and learning to learn) has been considered to be the engine of economic development.

However, even if knowledge is a non-rival good, the exclusion of others from the use of a certain piece of knowledge is well possible. This exclusion involves a monopoly on knowledge which restricts non-owners' rights much more than other forms of private property. Thus, a knowledge economy is characterized by a *fundamental paradox*.

On the one hand, since knowledge is a non-rival good, open access to its benefits could greatly contribute to global freedom and equality. Small firms and workers' cooperatives, using freely available knowledge - according to Arrow (1996) a "fugitive resource" - should become increasingly widespread (Hodgson 1999, Bowles 2004).

On the other hand, the privatization of knowledge restricts others' freedom and increases inequality to a much greater extent than other forms of enclosure (such as the closures of land which preceded the industrial revolution). The ownership of physical assets does not entail that similar (or even equal) assets are unavailable. Thus, individuals are not necessarily deprived of their freedom to pursue those patterns of self-development and growth requiring their use. By contrast, intellectual monopoly entails that no other similar resource is available to other individuals. The potential freedom entailed by non-rival use can evolve into an extreme restriction of others' liberties. Since the same piece of knowledge can be used an infinite number of times and its value increases with complementary pieces of knowledge, giant firms endowed with substantial portfolios of intellectual property rights can easily outcompete small firms. Thus, once knowledge becomes part of firms' private capital, big corporations are likely to enjoy the fruits of intellectual monopoly (Pagano 2014) and the knowledge-intensive economy becomes a very hostile environment for small firms.

Thus, we must face what may be called *the paradox of the knowledge economy*: it is potentially democratic and egalitarian but, at the same time, it is offering corporations and financial capital unprecedented opportunities to concentrate wealth and monopoly power.

The dark side of the knowledge economy has attracted little attention among economists. According to much standard economic theory, intellectual monopoly and a patent system are necessary evils required to stimulate an adequate level of innovative investments.

The orthodox argument can be challenged on two grounds.

Firstly, inventors may be compensated by the first mover advantages entailed by their discovery. Intellectual monopoly is not the only possible extrinsic reward for innovation, and its net benefits should be compared with the benefits of other incentive systems. Rewards, career advancement and prizes can be alternative extrinsic motivations that stimulate innovations. Moreover, some knowledge is also produced for intrinsic motivations: humans are endowed with a natural curiosity that can only be satisfied by discovering new things.

Secondly, the incentive effect is often obtained at the expense of some blockage of others' opportunities. Since innovation and scientific discovery are cumulative processes, the availability of some knowledge may be an essential input for the production of new knowledge. Thus, the intellectual monopoly of one individual may decrease the incentives of other individuals to invest in innovation capabilities. For society at large, the blocking effect is likely to be much larger than the incentive effect.

No realistic system for rewarding the production of new knowledge is optimal, and there are trade-offs among alternative institutional arrangements. Rewarding individuals for the production of new knowledge and allowing everyone to use it would, in principle, be the optimal solution, but estimating the value of the new knowledge is a very difficult task. Some of the benefits may only become evident after a very long time. However, rough systems of rewards for the production of open science, such as those offered by academic advancement based on peer reviews, have allowed remarkable advances of human knowledge (especially when the extrinsic motivation for prestige and money is accompanied by intellectual integrity and intrinsic human curiosity). Limited rewards for exceptional discoveries have been compensated by some payments for failed lines of investigation. This redistribution of rewards may have acted as a form of insurance that is very useful for stimulating an inevitably risky activity like scientific research.

In the case of open science, there is no blockage of similar or complementary discoveries. By contrast, in the case of intellectual property rights, while the rewards are high, also the blocking effects may be astronomically high. A comparative normative analysis of rewards and intellectual property rights should take into account the fact that their net benefits are different for different pieces of knowledge. It should also consider the related “institutional complementarities” among politics, law and corporate governance (Aoki 2010). For some pieces of knowledge, the blocking effects are more relevant than the incentive effects while, in other cases, the opposite may be true.

The complexity of the problem entails that a rich mix of institutions should be used by a learning society:

*“Every country should have a portfolio of instruments. The nature of the portfolio will affect the extent to which the country is successful in creating a learning society; it will affect the innovativeness and the efficiency of the system – including the uncertainty and transaction costs facing market participants. In our view, too much weight has been assigned to patents in the current portfolio of the United States”.* (Stiglitz , Greenwald (2014) 57% Kindle version)

The excessive use of the patent system is also due to the lobbying and the rent-seeking activities of (potential) patent holders. Basu points out that:

*“Not all but most of the rich got there by mastering the art of barter through nods and winks as well as the extensive use of the exchange of favors – activities that we were told had ended in the medieval age”* (Basu 2011, p. 27)

The patent attribution system is hardly an exception to this rule.

The excessive weight of the patent system is exacerbated by the fact that most knowledge is not only an impure public good. It is also a global common in the sense that its benefits are not limited geographically: *“a mathematical theorem is as true in Russia as it is in the United States as it is in the United States, in Africa as it is in Australia”*. The fact that many scientific truths *“are universal in nature”* (Stiglitz 1999) raises two problems for the patent system:

*i) “Every innovation makes use of previously accumulated knowledge--it draws on the global commons of pre-existing knowledge. How much of the returns to the innovation should be credited to this use of the global commons? Current practice says zero--because it is a commons, there is no price. But this is not the way things need be. In many parts of the world, there is a recognition that charges can and should be imposed for the use of commons (whether they are forests, grazing lands, or fisheries)”. Such charges can be justified on both efficiency and equity grounds. The international community could similarly claim the right to charge for the use of the global knowledge commons.”* (Stiglitz 1999).

As long as it is not clear how much firms draw from the global knowledge commons, it is not possible to establish their real contributions. The firm stands on the shoulders of giants (and also of many ordinary people) without paying for their services. Patents may be over-used because no patent-holder pays for the use of the global knowledge commons. While owners of privatized intellectual property prosper, universities and other public institutions (as well as all the producers of traditional knowledge, often in developing countries) receive no compensation. Ironically, they are even criticized for their “economic inefficiency”. By contrast, even in the cases in which knowledge owners take the unpleasant form of patent trolls and inhibit economic development, their rent-seeking activities are seen as a form of efficient profit maximization. Indeed, the only way in which universities and other public institutions can prosper is by betraying their mission of advancing open science. In many cases, they become the worst patent trolls (Lemley, 2008).

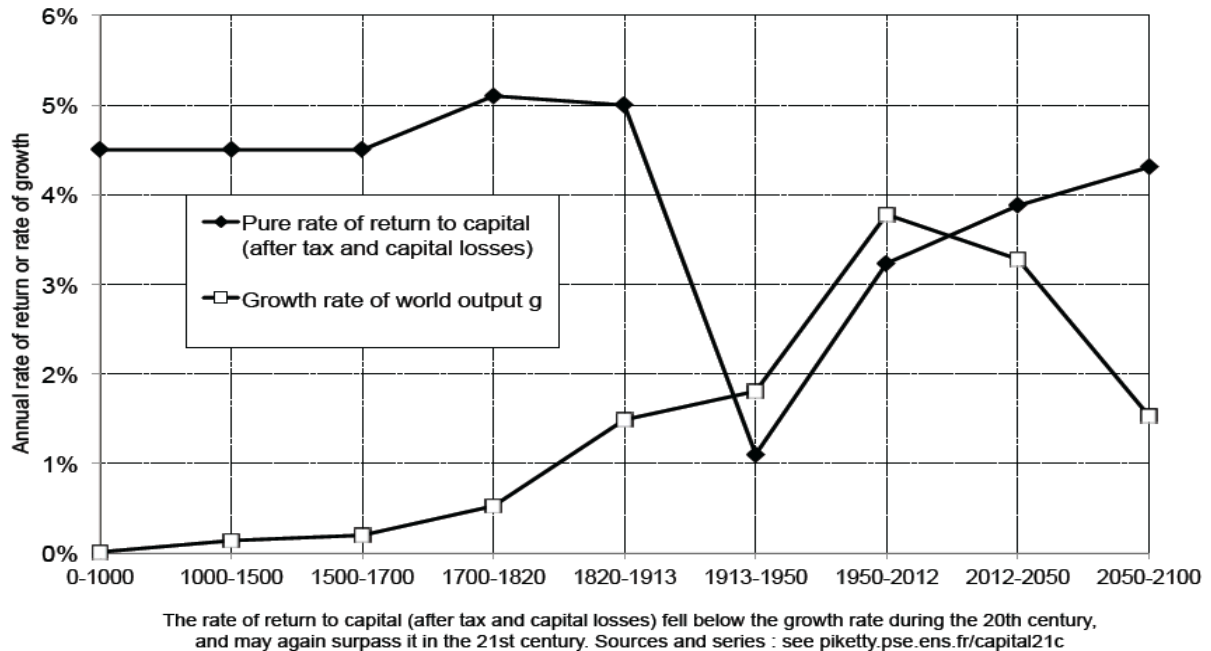
ii) If knowledge is a global common, each country has an incentive to use the public knowledge of other countries and to over-privatize the knowledge that it is producing. This free-riding problem is greatly exacerbated by the present institutions of the world economy. The institution of the WTO, with the associated TRIPs agreement, has created an international regime of strong intellectual property rights whereby the holders of each country’s patented knowledge can reap their profits around the globe. By contrast, the

public knowledge produced by a country is used without any compensation by the other countries. Hence each country is pushed towards a portfolio of instruments for intellectual property management that increases the weight of patenting well beyond what would happen in a closed economy.

### 3) Increasing inequality and the Advent of Intellectual Monopoly Capitalism.

In his much acclaimed book, Piketty (2014) uses the following figure, which underlies his criticism of the Kuznets curve. A rate of profit greater than the rate of growth involves redistribution in favor of capitalist owners and an increase in inequality.

**Figure 1**



Unfortunately, this has been the case only for a limited period of capitalism, and since the 1980s there has been a marked shift of capitalism toward a more unequal and unjust society. According to Piketty, Kuznets' hypothesis (that the initial increase in inequality was a price to be paid for a richer and more equal future society) is discredited by the recent divergence between higher rates of profits and lower rates of growth. By contrast, Piketty (Figure 1) advances the idea that capitalism



has an inbuilt tendency towards increasing inequality that was tamed by the two World Wars, which forced the ruling classes of each country to reach a compromise with its own working class. During the 1980s, the institutional compromises resulting from the two wars were dismantled, and capitalist economies resumed their natural trends of increasing inequality.

While factor prices and quantities usually move in opposite directions, Piketty's increasing inequality trend is justified by the fact that capital accumulation and the return to capital move in the same direction – a real puzzle for economic theory. To solve this puzzle, Stiglitz has introduced two useful definitions of capital and wealth, which are not properly distinguished in Piketty's work. Capital is the productive capacity of the non-human factors employed in production. By contrast Wealth is the value of these assets. Wealth and capital do not necessarily move in the same direction. For instance, Wealth may increase because the price of land goes up but this does not signify that productive capacity has increased. In other words, since in Piketty  $r$  is the return to Wealth, it may have little to do with the  $r$  of standard growth theory, which measures the (marginal) productivity of capital. It includes all sorts of “exploitation rents” including those related to monopoly power. When these rents increase, wealth increases as well (even if capital is unchanged):

*If monopoly power of firms increases, it will show up as an increase in the income of capital, and the present discounted value of that will show up as an increase in wealth (since claims on the rents associated with that market power can be bought and sold.) Stiglitz (2015 p. 24)*

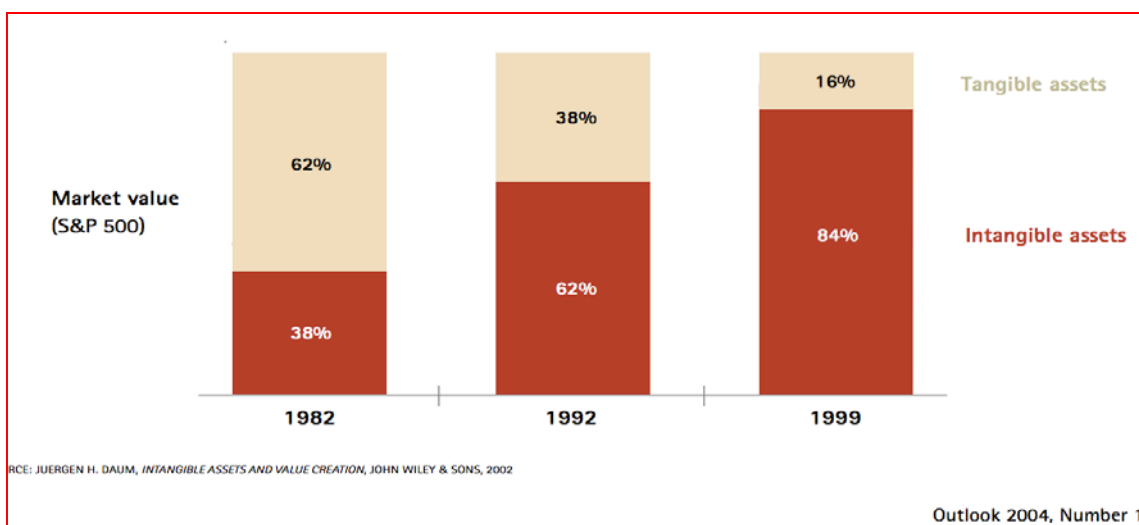
Stiglitz (2015) considers various types of exploitation rents. Some of them have characterized capitalism ever since the British Industrial Revolution. The increasing rent on land was already the major preoccupation of David Ricardo. Consequently, exploitation rents can hardly offer a convincing explanation for the increasing inequality of recent decades. By contrast, in the 1980s and 1990s, the new learning economy was characterized by the massive emergence of new exploitation rents. The growing intensity of knowledge in production, and its increasing privatization, greatly increased the rents arising from intellectual monopoly:

*Knowledge that is freely available increases output, but doesn't show up in anybody's balance sheet and therefore would not normally be reflected in the national accounts as wealth. But changes in the intellectual property regime (what Boyle (2003) refers to as the enclosure of the knowledge commons) have resulted in an increase in the wealth of those who are given these property rights. (Stiglitz 2015 p. 27)*

The years 1982-1999 witnessed a great mutation in the nature of the assets used in production. By

the end of the millennium, the wealth of corporations was generated not so much by their machines and buildings as by their intellectual monopolies. Patents, copyrights and trademarks now constitute the bulk of the big corporations' assets. Figure 2 offers a rough idea of the revolution of the assets structure that took place in 1980s and 1990s. In less than 20 years the percentage of tangible assets (houses, machines etc.) in the capital of the first 500 business corporations decreased dramatically, becoming about ¼ of what it had been at the beginning of the 1980s.

**Figure 2**



The US 1980 Bayh-Doyle Act and the 1994 TRIPs agreement (an annex to the institution of the WTO) allowed a massive privatization of knowledge. Financial claims could now be also held on a massive quantity of intangible assets related to knowledge and information.

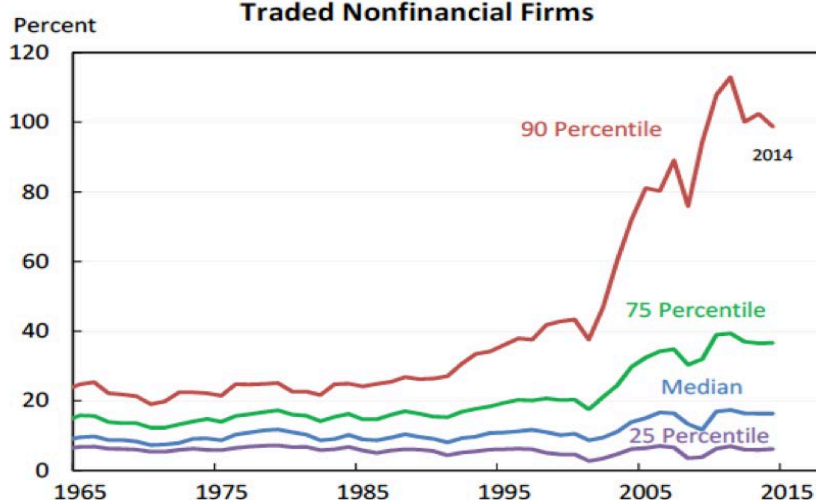
Corporations have exploited the huge economies of scale and of scope that arise when knowledge becomes a private input. Because of the strong international regime of intellectual property, they have also been able to decentralize production to firms located in low labor cost countries without the fear that independent competitors in those countries could also use their knowledge. The non-rival nature of knowledge, which could in principle favor small, and even self-managed, firms, is used to create artificial economies of size which make the cheap acquisition and defense of property rights possible only for big business. In the absence of knowledge privatization, the need to provide incentives to invest in human capital would be an argument in favor of the labor-hiring-capital solution. Because of the monopolization of intellectual capital, the knowledge economy can become a prohibitive environment for small labor-managed firms and an ideal setting for big corporations.

The monopolistic ownership of intellectual property encourages investment in skills necessary to improve the knowledge that one already owns. In turn, the skills that are developed make it even more convenient to acquire and produce more private knowledge. Thus, big business corporations are more likely to enjoy a virtuous circle between firms' capabilities and their intellectual property. By contrast, other firms may be often trapped in vicious circles of under-investment in human capital where the lack of intellectual property discourages the acquisition of skills and the lack of skills discourages the acquisition of intellectual property. This hypothesis is consistent with a substantial body of recent research showing that the divergence of returns on invested capital has greatly increased in recent times (even if the analysis is restricted to non-financial firms) and the fact that the well-performing firms have shared their rents with their employees. As a result, at least in the US, inequality has not been driven by growing income differentials within the same firm but by the dramatic divergence in the earnings of different firms.

The following Figure 3, taken from a paper also presented at the conference in honor of Joe Stiglitz (Furman J., Orszag P., 2015), illustrates the increased divergence between the return on invested capital in publicly-traded nonfinancial firms.<sup>2</sup>

**Figure 3**

**Return on Invested Capital Excluding Goodwill, U.S. Publicly-Traded Nonfinancial Firms**



The high relative earnings of the best performing firms are also shared by the workers, and they are the main factor explaining increasing wage inequality. As Barth, Bryson, David and Freeman (2014, p. 21) point out, the “distribution of earnings across establishments widened markedly

<sup>2</sup> The data including goodwill are less dramatic. However, Furman and Orszag (2015) show that even on this basis, the variance has increased over time. Moreover, they point out that since their focus is on the emergence of the high returns in the first place, excluding goodwill seems more appropriate.

during the 1970s-2000s period of increasing inequality of individual earnings.” It accounted for most of the increased inequality among workers “most tellingly accounting for the 79 per cent among the stayers – workers who continued from one year to the next in the same establishments” (p. 22).

Song, Price, Guvemen and Bloom (2015) find strong evidence that *within-firm* pay inequality has remained mostly flat over the past decades. They observe that

*“even if individuals in the top one percent in 2012 are paid much more than the top one per cent in 1982, they are now paid less, relative to their firms’ mean incomes, than they were three years ago. Instead of top incomes rising within firms, top-paying firms are now paying even higher wages. This may tend to make inequality more invisible, as individuals do not see rising inequality among their peers. More research needs to be done to understand why inequality between firms has increased so much more than inequality within them. But this fact of stable inequality within firms should inform our understanding of the great increase in inequality within the United States over the last three decades.”* (p. 30)

There is no doubt that *“more research needs to be done to understand why inequality between firms has increased so much more than inequality within them.”* However, we believe that the reinforcement of intellectual property rights is likely to be a strong candidate to explain the nature of these growing inequalities. We have seen that in a regime of strong property rights some firms are likely to find themselves in virtuous self-reinforcing circles between skills and intellectual property whereas some other firms suffer from a vicious interaction between lack of skills and lack of intellectual property. These mechanisms explain why firms diverge not only in the rate of returns on their invested capital but also in the wages that they pay. The firms endowed with a greater amount of intellectual capital not only earn much greater returns on the capital that they invest but also, by investing more in the firm-specific skills of their workers, they pay higher wages. In turn, the possibility of making investments in human capital specific to private intellectual property is an important reason for the high return of invested capital.

Employees’ skills specificity in firms owning much intangible proprietary intellectual capital (patents, trade-marks, proprietary projects and design) is likely to be much greater than that existing in firms employing a great deal of physical capital. Physical capital can be replicated whereas proprietary intellectual capital cannot, and it involves a high specificity of the employees that utilize and improve this type of capital. Moreover, the strength of intellectual property rights allows also widespread outsourcing of the activities that do not require firm-specific skills. Intellectual

monopoly limits the possibility of imitating the firm outsourcing its activities. Massive outsourcing has occurred both abroad in low-wage countries and within advanced economies, contributing to the growing inequality in the returns of capital and labor in the different firms.

The literature, which we have examined, limits the analysis of growing inter-firm inequality to non-financial firms. However, the overall increase in inequality is even greater if we include financial firms in the analysis. According to Philippon (2002, p. 1605), workers in finance “earn the same education-adjusted wages as other workers until 1990, but by 2006 the premium is 50 per cent on average” with executives in finance earning “250% more than executives elsewhere”.

Philippon argues that, similarly to the 1920s, the absence of regulations may have favored financial innovation (in this case with little IPR protection) and a demand for particularly skilled workers. Another possibility, consistent with the thesis advanced in our paper, is that the change of underlying assets, considered in Figure 3, has contributed to the recent dramatic change in the composition of the financial industry.

Intangible assets are more firm-specific than tangible assets, and the degree of specificity of the assets influences the nature of the financial industry and the mix of financial instruments (Williamson 1988, Nicita Pagano 2006). Tangible assets can be more easily redeployed to other uses and have a thicker market with a fairly well known price that can offer an easy guide for safe lending protected by collateral. Traditional banking can do very well in this situation. By contrast, intangible assets such as patents, reputation and trademarks do not have the same thick liquid markets of tangible assets and known market prices to be used in the case of default by the organization. In the case of default, the financiers cannot be easily compensated with the sale of the organization’s assets. Traditional banking is not a useful financing tool for companies of this type. Financiers can only gain by sharing the gains of the company. However, this is a much riskier business involving much more sophisticated skills.

The increasing commodification of knowledge has enlarged the set of assets over which financial claims can be defined and enforced. It has, in this way, contributed to remarkable growth of the financial industry in the past three decades (Philippon 2005). The knowledge embodied in human beings and the knowledge available as public goods cannot provide a significant basis for the growth of financial assets. By contrast, the knowledge privatized and transformed into firms’ intellectual monopolies increases their stock market values and furnishes a powerful engine for the expansion of financial assets. Note that the growth of the financial assets can be completely disentangled from the growth of the economy. This may be simply due to a redefinition of rights on

assets that could otherwise been part of the worker's human capital or a collective good belonging to the entire society. By contrast, this change in the nature of the assets may often hamper the development of economic opportunities. In some cases, knowledge would have been more productive if it had been embodied in the workers' minds or if it had been owned as a public good instead of a private monopoly. Increased financial wealth may come together with a decrease in the wealth of society and with an increase in the share of wealth owned by financial capital.

While the reinforcing of intellectual property favors financialization, the financialization of the economy induces companies to commodify their intellectual capital even more. In an economy in which strong competitive pressure requires the ability to attract cheap finance, the company's structure of assets evolves in this direction. The higher the intensity of private commodified knowledge, relatively to other types of knowledge, the easier it becomes to attract cheap finance. Thus, the financialization of the economy and the commodification of knowledge reinforce each other, and they jointly induce a mutation in the nature of the business corporation. The typical corporation becomes characterized by pervasive financial control and by the high intensity of intangible assets.

The "intangible corporation" has become a thing responsible to financial markets, and otherwise an irresponsible thing. Thanks to strong IPRs, production can be outsourced. In this way, many stakeholders have lost their rights in the corporation while they are still dependent on it in highly monopolized markets. Moreover, since profits derive mainly from intellectual monopoly, the knowledge-intensive corporation is also a litigation-intensive one, ready to use all possible ways to defend and expand its intellectual monopolies against competing public and private claims.

The main advantage of big corporations now consists in their possibility to assemble large packages of complementary knowledge, partially overcoming the "anti-commons tragedies" of knowledge privatization. However, this partial solution of the anti-commons problem comes together with an even greater monopoly power of the modern corporation, which owns large bundles of complementary pieces of knowledge and, as a result, some future technological paths.

Paradoxically, the monopoly power of the modern corporation shares some characteristics with that of the old chartered corporations, such as the East India or the Hudson Bay Companies. Chartered corporations had a monopoly on a limited (but fairly vast) territory. New corporations have a monopoly on a limited (but increasingly large and potentially global) field of knowledge. In some ways, their power is greater than that of the old corporations because nation-states now find it difficult to regulate their global intellectual monopolies. There is a growing asymmetry between

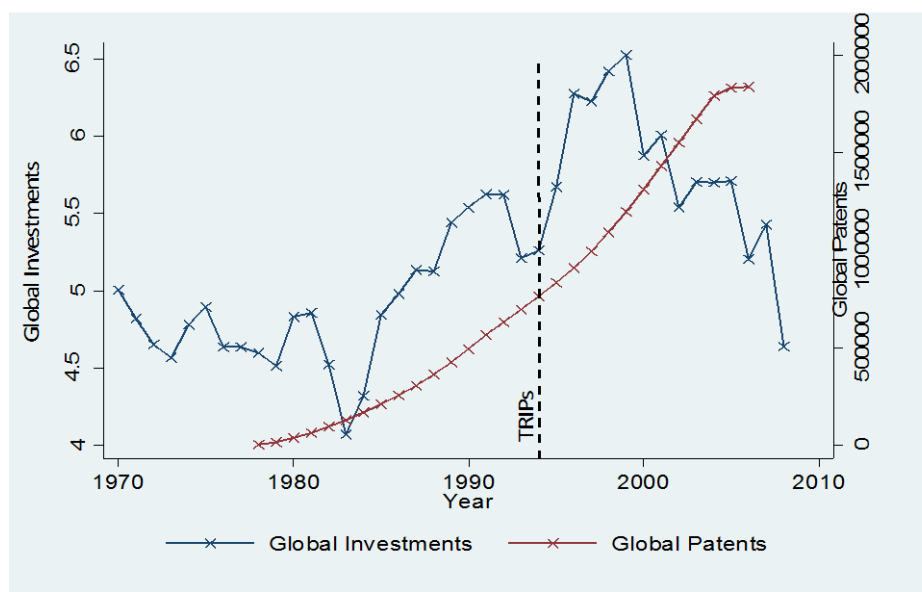
the power of the nation-states, with a monopoly power in many fields but on a restricted territory, and the power of the business corporations, which is restricted to few fields but is not geographically limited.

Financial firms and corporations are creating a new legal framework independent of any democratic control. The TTIP is completing the process of introducing a “*Lex Corporatoria*” that has the same private character as the “*Lex Mercatoria*” existing in the Middle Ages. However, the “*Lex Corporatoria*” is enforced with the help of the public authorities. Since firms can choose to incorporate in different countries, the latter compete to have the privilege (and the fees) of global enforcement. The UK is only too ready to become the Delaware of the global economy (perhaps also with the help of the TTIP treaty), unconstrained by the interferences of federal democratic government. By contrast, a just society requires some form of genuine global governance. It cannot be founded on the judicial system of a single nation willing to outcompete its rivals to attract corporate legal business. The founding principles of a just society should take into due account that knowledge has always been the most important global common of our species, and that its unequal distribution can generate an unjust global society.

#### **4. The Roaring Nineties and the Great Depression**

The monopolization of the economy has not only favored increasing inequality. It has also been a major cause of the Great Depression. In his 2003 book Stiglitz already showed that the seeds of a subsequent crisis had been planted during the “roaring nineties”. He observed that, in the dot.com bubble of the 1990s, the *irrational exuberance of investors* played an important role in planting the seeds of future destruction. However, the exuberance was not completely irrational. Both the roaring nineties and the subsequent dramatic economic crisis can also be, at least partially, explained by a rational (even if eventually self-defeating) investment dynamic induced by the reinforcement of intellectual property, which started with the 1980 Bayh-Doyle Act and culminated with the 1994 Trips Agreement.

Figure 4



However, the time profiles of the incentive and blocking effects are very different. The incentive effect is immediate. As soon as the reinforcement of intellectual property is introduced (and even before, when it is expected to happen), firms are induced to invest in innovations that can be patented. By contrast, the blocking effect comes later, when many innovations have been patented and many technological paths are forbidden, or too costly, for non-owners.

Thus, the introduction of stronger property rights is likely to favor an initial boom and later to cause a depression of innovative investments – an investment pattern consistent with the boom of the “roaring nineties” as well as with the following investment crisis culminating in the great depression (see Figure 4, taken from Belloc and Pagano 2012). After the reinforcement (and also immediately before, when the reinforcement was widely expected) of intellectual property rights achieved with the 1994 TRIPs agreement, there was a total world increase in investments for about five years. However, after this initial boom, a continuous decline of global investments occurred in the first decade of the new millennium, culminating in the recent global financial crisis. The roaring nineties were not only followed by the great depression; they also contained its seeds.

It is a commonly accepted wisdom that the financial crisis was due to an excess of savings with respect to investments. While this situation has been described as a ‘saving glut’, the data show that the crisis was due more to a famine of good investment opportunities than to an increase in the propensity to save. The monopolization of the global economy has contributed to this famine of



investment opportunities.

In the crisis of the 1930s, protectionism was considered one of the worst consequences of the financial crisis. By contrast, in the recent downturn, protectionism (in its new form of global IPR tariffs) may have been a cause instead of a consequence of the financial crisis. Intellectual property rights may restrict investments more than tariffs. Even the highest tariff can at most protect the national industry against foreign competitors. By contrast, intellectual property can offer global protection to a national firm. When a coordinated cluster of firms of a nation-state (and often with its important, even if usually unrecognized, support) owns a patent thicket covering a particular sector of the economy, intellectual property rights can become a very powerful form of economic protectionism. The other economies are forced to specialize either in sectors where they are endowed with similar patent thickets or in the mature, and competitively overcrowded, sectors where no intellectual protectionism is available.

However, even global intellectual protectionism for wealthy countries and free competition for poor countries were not considered to be satisfactory. *“The United States pushed other countries to open up their markets to areas of our strength, such as financial services, but resisted, successfully so, efforts to make us reciprocate.”* (Stiglitz 2003, p. 206).

There is an interesting difference between standard protectionism and intellectual property protection. The former limits international trade: goods that could be cheaply imported are produced in the protected country. The latter stimulates international trade and may have been one of factors driving globalization: goods can only be produced in the protected country (or under a license in others) and they must be imported by the other countries. However, both types of protectionism limit valuable investment opportunities and can have a depressive effect on global development.

The Council of Economic Advisors opposed the growing intellectual protectionism that, according to Joe Stiglitz (2003, pp. 208-9), was negotiated during the Clinton administration especially under the pressure of the drug companies. It was indeed difficult to resist that pressure for two reasons. Firstly, even if the term “intellectual property” rests on a misconception, it can nevertheless camouflage monopoly by identifying it with ordinary private property. The private ownership of knowledge is very different from ordinary private ownership. Knowledge is a non-rival good. The use of a chemical formula does not crowd out other uses in the same way as the use of a chair entails that others cannot sit on that chair. The private property of chair is not depriving others of other freely available uses, as it happens in the case of knowledge. “Stealing” knowledge is like

depriving some individuals of a chair on which they can, however, continue to sit. Indeed, the term “intellectual property” is a recent ideological construct. There is no trace of it even in the relatively recent work of Schumpeter, who contributed so much to our understanding of the relations between innovative activities and entrepreneurial profits. However, this misleading ideological construct is rather powerful. It has given intellectual monopoly the same status as ordinary property. It was perhaps because of this ideology that American negotiators of the TRIPs agreements (for instance Kantor, mentioned in Stiglitz 2003, p. 208) believed that fair international intellectual treaties prescribed a respect for private property that included what was in fact an intellectual monopoly and involved a policy similar to tariff protectionism.

Secondly, even if the (mis-)conception of intellectual monopoly as ordinary private property may lead to frustrating long-run results, it may be reinforced by its short-run effects on reality. For social actors, the term *intellectual property* has not only a cognitive but also a manipulative function. The cognitive and manipulative functions are interdependent, generating what Soros (2010, 2013) calls ‘reflexivity’. The problem with reflexivity is that, for some time, wrong conceptions may appear to be right only because they involve a manipulation of reality that seemingly confirms them. In the case of the (mis-)conception of intellectual property, this perverse reflexivity is particularly evident. The agents expect from intellectual property the usual benefits that derive from the private ownership of rival goods. In the roaring nineties, the manipulation of reality arising from this (mis-)conception seemed to confirm the optimistic expectations. This is hardly surprising. We have seen that, when property rights are reinforced, the immediate effect is an investment boom. This helped to confirm the idea that one was getting from intellectual property the usual advantages of well-defined and secure private property rights.

For these reasons, countering the reinforcement of intellectual property rights in the roaring nineties was particularly difficult. Even now, in spite of the fact that we have gone through a major depression, it is not easy to limit this form of protectionism. After all, the advantages of intellectual property seem to be proved by the fact that firms and nations more endowed with this type of property do much better than those which lack it. Even if it is well known that what is (relatively) good for a single entity may be bad for all the entities, many people are tempted by easy and misleading generalizations. The fallacy of composition may still be a powerful obstacle to understanding of the economy.

## 5) Conclusion.

For the great recession to be overcome, it is necessary that more knowledge becomes available in the global public domain. In the absence of a world government, each nation-state should invest in public knowledge. However, there is an evident free-rider problem. For each nation-state, it is convenient that other nations sustain the costs of these investments in public knowledge. The widespread underfunding of universities and of other public research institutions is an evident expression of these free-riding policies involving a huge under-investment in the most important global common produced by humankind.

To overcome this global underinvestment in the production of new public knowledge, some international institutions must change. The global enforcement of IPRs, coupled with the national fragmentation of public investments, has induced each nation to free ride on the production of the global pool of knowledge. Ironically, these policies are often defended by (mis)using the holy name and the well-established ideology of unfettered competitive markets. By contrast, free riding on the production of public knowledge should be seen as a damaging form of unfair competition where one reaps the benefits of others' costly investments. The WTO should be reformed in such a way that this unfair competition is tamed. The charter of the WTO should include rules stating that a fair participation in international trade requires a GNP fraction (increasing more than proportionally with national wealth) of each member state to be invested in open science and to be made available to all countries as a global common.

The modern knowledge economy offers great opportunities for the multiplicative effects of public investments. In recent years, much knowledge has been privatized and monopolized. The multiplier could be increased when government expenditure helps to transfer knowledge from the private to the public sphere. Knowledge is a non-rival good whose uses are often inefficiently restricted by existing monopolies. Public research can have a beneficial role in lifting these restrictions. In some cases, also public buy-outs of IPRs could be useful. They could leave the former monopolies with more money and more competition. In this way, they could greatly stimulate their investments. At the same time, competitors could now enter the markets and increase their investments, marshaling additional resources. For many potential uses, knowledge is presently an idle resource and, in the present circumstances, a super-multiplier is likely to exist. The standard multiplicative properties of public investments would be reinforced by the intrinsic multiplicative properties of a public good like knowledge. Open science and open markets are institutional complements. They should replace

a world that is increasingly characterized by a perverse complementarity between closed science and closed markets.

We need some courageous policies of asset redistribution. Even in the case of tangible assets, some policies of asset redistribution can decrease agency costs and enhance the efficiency of the economy (Bowles, Gintis, Olin Wright 1999). Some redistribution and collective sharing of intellectual assets would not only involve these standard advantages of efficiency-enhancing redistributions; they could also generate additional benefits due to the non-rival nature of knowledge. Many people could simultaneously enjoy the use of an asset moved from the private to the public sphere of the economy. What is redistributed as public knowledge can be a multiple of the amount taken away from the present private owners.

The learning society can take different forms. Potentially, the non-rival nature of knowledge can make it a fast-growing and just society. However, the same knowledge, when privatized, can cause more stagnation and inequality than the standard tangible production factors. This second unfortunate possibility is what underlies the current crisis of the learning society. Moving more knowledge into the public space can however open unprecedented possibilities for our species. We may conclude with the title of the last chapter of the *Price of Inequality*: “Another world is possible”!

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