

Political Economy of Information Industry

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Abstract

The transition from a manufacturing and product based economy, which primarily produces tangible goods, to an economy which is extensively 'knowledge-oriented' and dominated by information goods has been dramatic. The key drivers for the transition have been the globalization and the emergence of 'self-acting' transnational finance capital. Under the current system of economic organization, Information has seen increasingly being monopolized, sold and manipulated through restrictive legal regime with a single motive of furthering the profit for transnational corporations. The monopoly rights on the information acts as the key reason behind the ability of the Information technology companies to amass huge wealth and unreasonable profit. These companies are being evaluated in the 'speculative' market rather than based on the real assets helps them to project a highly inflated valuation in the stock market compared to traditional brick and mortar companies. Such speculative evolution and transactions with a total disconnect from the real asset and economy leads to the formation of a parallel virtual economy which is vulnerable to the high instabilities and bubble formations.

Keywords: *Information Industry, Political Economy, Information Technology, Information Monopoly, Knowledge Economy*

1. Introduction

The present era is often described by buzzwords like Information Society, Knowledge Society, Information Age, Global Village etc, indicating the increased role and influence of 'Information' in our social, economical, political and cultural lives. These descriptions primarily reflect the structural changes on how our economic activities are organized today. Information, knowledge and culture are vital to the human freedom and development. Information/knowledge has always played an important role in all the societies hitherto in the history, shaping our world view and influencing how we understand and react to our

surroundings. The key difference now compared to the earlier times however is that Information has evolved and transformed over time from being simple 'knowledge' to being a commodity and further a technology in itself, encompassing all walks and activities of our lives. Space-time compression due to the revolution in the Telecommunication technologies has fundamentally changed the way Information is produced, distributed, accessed and used. Advancement in the information technology has revolutionized the way we live our lives in the present society and has created new opportunities, possibilities and of course new challenges as well.

The transition from a manufacturing economy, which primarily produces tangible goods, to an economy which is extensively 'knowledge-oriented' and dominated by information goods has been dramatic. The key drivers for the transition have been the globalization and the emergence of self-acting transnational finance capital. Under the current system of economic organization, Information has seen increasingly being monopolized, sold and manipulated through restrictive legal regime with a single motive of furthering the profit for transnational corporations. The monopoly rights on the information acts as the key reason behind the ability of the Information technology companies to amass huge wealth and unreasonable profit. These companies are being evaluated in the 'speculative' market rather than based on the real assets helps them project a highly inflated valuation in the stock market compared to traditional brick and mortar companies. Such speculative evaluations, disconnected from the real asset and economy, leads to the formation of a parallel virtual economy which is vulnerable to the high instabilities and bubble formations

2. Information

Information is a non-material, non-energy entity, which is digitally stored as 'bits' in storage medium (like computer hard disk, CD or other storage devices) and/or transmitted as energy (radio/sound

waves, light etc). Software, databases, video, music, books, designs etc are examples of Information. One of the important and unique attributes of Information is that it can be termed as a 'non-rival' good^[1], which means that once an 'Information' good is created, it does not require any further resources to create a second copy of the same. i.e. The marginal cost of creating copies of already created 'Information' is practically zero. Any number of copies of the already produced Information good can be created without losing any 'original' quality, at zero cost. A software product, once created, takes practically zero cost to produce further copies of the same product. Same is the case with video, music recordings, book, reports etc as well.

The other key attribute of Information is that it acts as both input as well as the output at the same time in the information production process. To create new Information, one needs Information which has been created prior. For example, to write a report, one needs to know existing related information. To create a movie, one needs to know about the current as well as many other previous cultural forms. This dependency effect of Information is termed as 'on the shoulders of giants'. The combination of the 'non-rival' and 'on the shoulders of giants' characteristics makes Information an ideal candidate for being a 'public good', most suitable for non-market mode of production.

3. Information Economy

An economy in which the information sector is more dominant than agriculture or industrial sectors is what is termed as Information Economy. The Information sector is one that deals with creation, manipulation, processing, transmission, distribution and consumption of Information. Information goods, which may need considerable resources to create first time and takes no cost to reproduce subsequent copies, lead to an economy that is uniquely different from the economy of physical goods.

The idea of a post-industrial society and economy started emerging in the 1950s as the expansion of non-agriculture, non-industrial sections of the economy was becoming evident in the advanced industrial economies. Organization of Economic Co-operation and Development (OECD) suggested that computer can be considered as the key to the second industrial revolution just as the steam engine was the center of the first industrial revolution. According to M.U.Porat, who has pioneered the research to understand the basis of structural shift happening in the economy, an economy becomes Information Economy when information related work begins to exceed the work related to the other

sectors. According to his estimation (1977), US became an Information Economy in 1967 when 53% of the US workforce was engaged in Information Work.

4. Drivers of Information Economy

The results should be concisely presented. Results and discussion may be separate or combined based on the author's requirement.

In the first half of the nineteenth century, Industrial revolution fundamentally changed the production process and significantly impacted and changed the way people lived then. Industrial society has been identified with mass production, mass distribution, mass media, mass creation, mass entertainment, mass settlement etc and gave rise to new production environment like huge factories and 'fordist' assembly line industry production processes. The capitalist mode of organizing production forces and the associated wealth accumulation process gave birth to big corporations and business houses. Over time, many of these corporations had grown so huge and had spread across continents (transnational) that many of them could boast of assets and revenues more than the GDP of many countries around the world. With the rapid growth of operation and size, reliance on Information for business strategy, management, operation and administration became increasingly critical for the corporate.

Growth of service sector (financial services, business services, administration, transport, advertising etc) and the effort to seek global market for the service industry necessitated new means of faster creation, processing and exchange of huge amount of information. Services offered to the far away markets necessitated means of processing and exchanging information fast, not only for providing the services themselves but also for enabling effective control, monitoring and management from/of remote locations.

Larger share of workforce became engaged in the service sector compared to agriculture and industrial sectors. Increase of workforce in the service sector was necessitated because of the growth of industrial corporate, which necessitated organizational restructuring in the functional lines and gave rise to a new category of 'white color' workers. Today, 76.7% of the GDP of USA is contributed by the Service sector. 22.2% of the GDP is from the industry sector while the contribution of agriculture is a mere 1.2%. More than 80% of the workforce in the USA is in the service sector with 44.21% of wage labor in the 'knowledge jobs' and 42.3% in the non-knowledge service sector. Service sector acts as the biggest producers, distributors and consumers of information.

Table 1: Dominance of Service Sector in the economy

Country	Economy Size (\$trillion)	Service Sector	Industry Sector	Agriculture Sector
USA	14.6	76.6%	22.2%	1.2%
Europe	16.3	73.2%	25%	1.8%
India	1.53	55.3%	28.6%	16.1%

Emergence and rapid growth of global finance capital is the other factor that significantly contributed and acted as a catalyst to the evolution of Information economy. Growth of finance capital necessitated the technologies to enable faster processing and distribution of information across geographical boundaries. Today, 96% of the entire global transactions are financial transactions where no goods or services exchange hands. “From 1978 to 2007, the amount of debt held by the financial sector soared from \$3 trillion to \$36 trillion, more than doubling as a share of gross domestic product. The very nature of many Wall Street firms changed—from relatively staid private partnerships to publicly traded corporations taking greater and more diverse kinds of risks. By 2005, the 10 largest U.S. commercial banks held 55% of the industry’s assets, more than double the level held in 1990” (source: Report of the Financial Crisis Enquiry Commission, USA, January 2011).

From being a sector that finance industries and provide capital for the industrial production, finance sector has grown as an industry in itself. Finance Capital has grown by such huge proportion that it has started acting on its own, operating mainly through stock markets and other speculative means, investing globally and accumulating wealth. A world economy of \$70 trillion generates transactions of close to \$700 trillion daily. Information technology acts as an enabler supporting such huge and faster movements of critical information. In essence, Globalization, which may be understood as the continuing efforts by transnational corporations to spread the markets world over, selling goods, services and the finance capital while also utilizing/deploying the cultural and entertainment products to 'prepare' the target markets for these offered goods and services, act as one of the key drivers for the development and advancement of global information network and associated enabler technologies in the current economic environment.

Through the relentless operation and execution of capitalist wealth accumulation process till date, huge wealth is now concentrated in a few hands world over. In the USA, the top just 1% holds 43% of the entire financial wealth. Top 5% holds 72% of

the financial wealth, while the bottom 80% holds just 7% of the total wealth. The 'Rich' park their wealth with the corporate and the corporate becomes the custodians of the wealth for the rich and always is on the lookout for further accumulation. Top 10% has 80-90% of the wealth in the form of business equities, financial securities, stocks etc, which is a key motivation for business houses to go transnational in the quest of more profit.

Table 2 – Rich class park their wealth with corporate

Investment Asset	Top 1% class	Top 9% class
Business equity	62.4%	30.9%
Financial securities	60.6%	37.9%
Trusts	38.9%	40.5%
Stocks and mutual funds	38.3%	42.9%
Non-home real estate	28.3%	48.6%

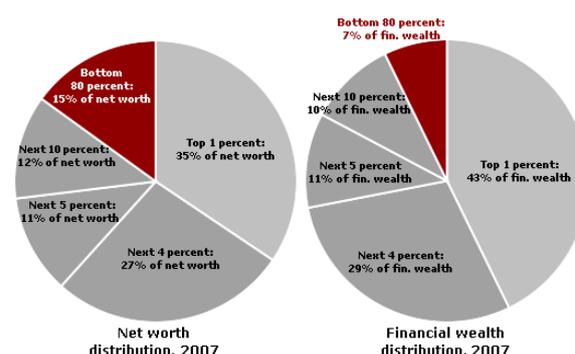


Fig (1) Top 5% holds 72% of the wealth (Source: Wealth, Income and Power – G. William Domhoff)

5. Global Information Network

Privatization of Telecommunication networks in the USA lead to the emergence of huge telecom companies, which went on to become transnational entities over time. These telecom giants in the west lead the expansion of communication capabilities, network reach and technologies globally and thus a global communication network emerged. With Information playing increased role in industrial production process, last 4-5 decades saw Information transforming from being pure knowledge to a marketable commodity. Rapid growth of Information to the center stage gave rise to an industry itself, producing information goods which included software products, software applications to enable other services, cultural products in digital form (music recordings, videos etc) etc, giving birth to an Industrial Information Economy (since 1960s).

Arrival of the Internet was another critical milestone in the journey of communication revolution. Internet

is essentially a result of the marriage between the communication and computers and it revolutionized the entire domain of information production, delivery, access and usage. Since its emergence as the global information network, Internet has increasingly started playing the central role in the businesses, creating new business opportunities, transforming existing businesses and becoming integral part of every transaction in the business and financial world, causing the transition of economy to a Networked Information Economy. Dissolution of physical boundaries for exchanging goods, services and finance, enabled by the global information network, provides newer markets and newer opportunities, including low cost labor and large high-concentration consumer segments.

Internet has tremendously empowered individuals, providing them the computing power and a global medium to express, together with a means to create and distribute Information at a fraction of the cost compared to earlier times. Internet has provided a global medium with huge potential to democratize the creation and exchange of Information which is critical to the freedom and development of the humankind and the society as a whole. Internet has brought convenience to the day-to-day lives of many, helping them perform transactions easy, fast and at the comfort of their homes or work and has emerged as a platform that can bring in transparency in the public transactions and government functioning. With the emergence of social networking and online communities, Internet also has emerged as a potential platform that could help organize and galvanize social and democratic movements across the world.

Internet however has also been increasingly commercialized. The Net is getting more and more crowded with advertisement and marketing and is becoming an electronic shopping mall. The frenzy within the telecommunication, media and entertainment companies is to determine which firms will control the biggest share of the bits of information that will make their way into homes, classrooms, and work places all over the world. Quoting Bill Gates, "Information highway will allow those produce goods to see a lot more efficiently than before what buyers want and will allow potential customers to buy those goods more efficiently".

Internet is a great example and a model for the innovation and achievement possible by public funding, research and collaboration. Internet was initially funded by the NSF, NASA and other Government agencies. Later it was turned over to private players. Today Internet is fully funded by private enterprises such as MCI, AT&T, BBN, turning Internet into a fully private commercial

operation. These private enterprises own regional 'network access points' and sell Internet access to local service providers, private companies, institutions, government agencies etc (now even government is another commercial customer and has to buy the connectivity). With the telecommunication infrastructure controlled by private enterprises globally and the technology to be guided and pursued based on its profit making potential, the risk will be high for much of the promises of the global information network going unrealized.

6. Information Production

In the Networked Information Economy, Information is produced by both market and non-market sources. IT companies, media, entertainment and communication firms, financial services firms, business and other professional services etc are all examples of market sources. Their information production is market driven or for the market. Peer and collaborative production, individuals and non-profit organizations, government research labs etc are the main non-market producers of Information. They produce information for the public rather than to be sold in the market for profit.

Market production of Information relies heavily on exclusive rights (IPRs) to establish monopoly on the Information produced and to reap huge profits. Emergence of global information network has resulted in significant rise of Information production in the non-market mode and has increased the participation of individuals in the creation of Information. Enforcement of excessive exclusive rights on Information through IPRs (Intellectual Property Rights like Copyright, Patents etc) and thus increasing the cost of Information and imposing restrictions on the access will hamper new innovations and will decrease the creation of new Information as well as the Information consumption. One of the most important contributions of the global information network is that it inspired a considerable section of non-market sources to become part of the Information production, who otherwise could never have participated in the process. Free Software Movement is an important and glorious example of how volunteers from different parts of the world with different skill sets and interests can create valuable Information goods outside the market forces. Tens of thousands of people world over create information and make it available for free on the global information network. With the means of production becoming affordable and available to many, the mass participation in the Information production has increased many folds. Wikipedia is one of the great examples of what can

be achieved through collaborative work by group of people coming together for other than pure 'economic' motives.

6.1 Monopoly Pricing

IT companies include a wide range of enterprises like software products companies, software services companies, dot-com service companies, IT enabled services companies (BPO) etc. Software products may be stand-alone products that are directly used (word, tally, games etc), or applications that facilitate transactions in other industries (e.g. online banking). Software products companies accumulate huge profit due to the 'monopoly pricing'. While exclusive rights allow software companies to price software products arbitrarily high, the zero marginal cost of reproduction of software products allow them to sell the products at many times higher price than the actual production cost (which is practically zero) . Microsoft, Oracle etc are the examples of software products companies (with product companies also offering various services, the distinction between products companies and service companies are becoming more blurred). Microsoft and similar software products companies make billions of dollars in profit due to the 'monopoly pricing'. Software product services companies offer development services to other software products companies and build whole or part of the products for the parent companies (eg. Infosys, HCL, Wipro etc). These companies are still part of the 'distributed' production process for 'manufacturing' the software products. The unreasonable profits realized taking advantage of monopoly pricing and the hype created around the Information Technology companies help to create higher valuation for these companies in the speculative stock market. Since the stock value becomes the barometer than the real asset in company valuations in the new economy, the new economy companies that earn much higher profit margin due to the monopoly pricing enjoys huge capitalization in the stock market.

Table 3 Virtual Valuation of new economy companies in the stock market

Company	Revenue (\$B)	Profit (\$B)	Asset (\$B)	Market Capitalization (\$B)
GE	150	11.6	751	216.2
Microsoft	66	20.6	92	215.8

(Source: Forbes list of Top 100 companies)

6.2 Growing Monopoly

Information producers in the market are relentless in their drive to create, retain and expand their monopoly over the Information they produce.

Software companies protect their software products through copyright and efforts are on to bring software into patent regime which will provide stronger exclusive rights and protection. 1990s witnessed the emergence of a global commercial media market taking advantage of the technology advances. Music industry has been turned into a concentrated commercial industry since the emergence of phonograph. Media and entertainment companies have grown to become transnational entities, dominating the world market with their cultural and entertainment products (likes of Disney, Bertelsmann, Times Warner etc) and thriving on the monopoly rights. Hollywood has been in the forefront for strengthening monopoly laws. Attempts were made to pursue hardware vendors to incorporate designs into the computing device hardware itself which will enforce digital rights of the content played on the device. Law suits against companies like MP3.com, Napster etc, which allowed users to download and share music, was part of their fight to enforce strict IPR regime. Hollywood was the major force lobbying for the draconian IPR laws like DMCA (Digital Millennial Copyright Acts) (which calls to ban not only copying but even technologies that may help copying as well). Hollywood and Music recording companies spare no effort in ensuring software tools and standards are evolved in such a way that the digitally stored cultural products can be sold as 'goods' thus enabling them to continue to enjoy huge profits. Latest legislative initiatives like PIPA and SOPA rules in the USA have invited strong and widespread protest all over the world. Such initiatives need to be viewed as part of the continuing effort to curb and restrict access to Information and to strengthen various forms of Internet censorship. US government's attempts to cripple wiki-leaks by influencing service providers and banks were widely reported. Such attempts to strengthen the monopoly may only increase in the coming days with access restrictions, censorships and IPR laws becoming more stringent for ensuring monopoly pricing for the Information companies.

6.3 Distributed Production

A fundamental change in the production process in the new economy companies is the transition from the old fordist 'under one roof' production to 'distributed' production, fragmenting work into smaller individual tasks and executing the tasks at different physical locations. Global Information Network enabled companies to 'outsource' the fragmented tasks to remote locations across countries in search of low-cost labor and still able to monitor and manage the production process effectively. Fragmentation of work enabled the

commoditization of work and made possible to digitally monitor the effort in terms of 'units' of work (#of hours, #of defects fixed, #of calls made, #of clicks made etc), in many instances, taking away the overall context and ownership of the work from individual workers. Engagement model for labor is changing to 'flexible labor' model. Bigger share of the workforce is being deployed as flexible workers, contingent and contract laborers, temporary workers etc. More than 40% of the 'knowledge workers' in the USA today are contract workers. 'Virtual Mobility' of labor, made possible by the Information network, where the labor moves from place to place without involving the movement of the 'body', has made 'flexible workforce' model more attractive for the corporate.

7. Knowledge Workers

Human ability to capture existing information from the surroundings and convert it into new forms assumes highly critical role in Information production. Thus, the nature of labor input needed for Information production is radically different compared to agriculture or industry production. The very nature of the Information production process instills a sense of 'Individualism' among the workers instead of a 'community' sense. Strict hierarchical relationship of the traditional production environment is giving way to 'competitive individualism' in the Information production environments. Most of the work being 'fragmented' in nature (enhancements, feature additions, bug fixings, maintenance, support etc), the individual worker is removed from the big-picture, purpose or ownership of the complete work and is provided with 'units' of work instead, leading to a sense of 'alienation'. With companies increasingly moving to flexible workforce model, knowledge workers face job insecurity and associated mental and work related stress. Even 'permanent' employment is no longer considered as permanent in the new economy companies.

Knowledge workers, typically being highly educated, qualified and comparatively highly paid (primarily because of the 'monopoly pricing' of the Information products), are unsure of their 'worker' status and show reluctance to position themselves as 'workers' in the production chain (though they are essentially workers who are part of a 'distributed' production process participating in the production of one or more part of a larger product). Time span of association of an employee with a single company is usually shorter and thus workplace groups tend to be short-lived. Dependency on peers to perform tasks being insignificant, the motivation for the knowledge workers to form closer ties with the co-workers is nonexistent or weak. Collective

bargaining and workers associations have not yet become part of the knowledge workforce. Absence of such workers groups coupled with the absence of appropriate labor laws in this sector create difficulties for the knowledge workers and they remain handicapped being not able to question unfriendly practices at their work places.

Knowledge industry still is of 'artisan' nature. The quality and the nature of the software product still depend heavily on the individuals. Software tools automate the process of software production to some extent and try to reduce this artisan factor in the production process. Also, in the new economy, growth is not accompanied by proportionate employment opportunities. The current development model is leading to more of a 'jobless growth', which will only add more pressure and insecurity on the workforce.

8. Conclusion

Emergence of a global information network has radically changed the way we live, interact and do our business. Information is a core input to the human freedom and development and thus it is important to ask how it is produced, who owns it and who has access to it. Unrestrained access to both, the Information as well as means of producing Information for every section of the society is critical to the progress of the society and to enhance the 'quality of life' for everyone. Emergence of a global information network has provided a huge opportunity, previously unseen and unthinkable, to democratize the Information production and to address the issues of freedom and justice. Information Economy is at present driven by the corporate monopoly, taking advantage of the great advancements in technology backed by a stringent legal framework to support the monopoly on Information production, distribution and access. The Global Information Network has increasingly been commercialized and is utilized for commercial means as a market place. It is important that these advancements be utilized more for the public good and the control is vested with the larger public than with the corporate profit interests. There exists a need for encouraging alternate Information production models where the motive is the societal well-being rather than the monopoly profit.

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