Alan Greenspan: Intellectual property rights

Remarks by Mr Alan Greenspan, Chairman of the Board of Governors of the US Federal Reserve System, at the Stanford Institute for Economic Policy Research Economic Summit, Stanford, California, 27 February 2004.

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Market economies require a rule of law. A society without state protection of individual rights, especially the right to own property, would not build private long-term assets, a key ingredient of a growing modern economy.

Since its early stirrings in eighteenth-century Britain, modern economic development has been characterized by an ebb and flow in the intensity of state involvement in shaping the economic environment. According to the legends of the early American West, the only law west of the Pecos River was administered by Judge Bean. I am not sure how much law that was, but I do know that much protection of property in sparsely settled western communities just after the Civil War had to be privately provided. Understandably, trade was limited in such an environment. Economic growth was greatly facilitated by the emergence of civil government, which provided, among other things, consistent and predictable enforcement of property rights.

More recently, the states of the former Soviet Union suffered for a time many of the alleged characteristics of the American Wild West-legal chaos, rampant criminality, and widespread corruption. This difficult period of transition in the Soviet satellite countries followed four decades of central planning in which the arbitrary enforcement of an inefficient set of rules resulted in massive economic failure. With few exceptions, the new leaders of these countries recognize that their future economic success will depend on an efficient and predictable rule of law.

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A tension has always existed between a desired continuity in the laws and regulations governing trade and business practices and the necessary updating that is required to keep pace with a growing and, hence, changing economy. Uncertainties that stem from the arbitrary enforcement of the body of prevailing rules result in higher risk and an associated elevation of the cost of capital, which in turn inhibits economic growth.

Implementing an effective rule of law, however, has its own difficulties. One key component, a law of contracts, governs the resolution of certain disputes between parties. Yet if adjudication were requested for more than a very small fraction of contracts, our court system would be swamped into immobility and the performance of our economy would suffer. Thus, if our market system is to function smoothly, the vast majority of trades must rest on mutual trust and only indirectly on the law.

A more general concern is that laws can never be fixed in perpetuity. As societies and economies evolve, the details of the law, though generally not its fundamental principles, need to change. But any uncertainty about the clarity and fixity of the law adds to the risk of trade, which as I noted, is reflected in a higher real cost of capital.

We in the United States endeavored to lessen legal uncertainty by embedding our most fundamental principles in a constitution, which we made difficult to amend. The commercially and economically salient specifics are typically expressed in federal or state statutes. In general, this arrangement seems to have provided us with a healthy balance of continuity and predictability and, yet, also the requisite flexibility to respond to evolving economic and societal circumstances.

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Reflecting that flexibility, the direction and the emphasis of legislative revision over the generations have mirrored the changing structure of our economy. In recent decades, for example, the fraction of the total output of our economy that is essentially conceptual rather than physical has been rising. This trend has, of necessity, shifted the emphasis in asset valuation from physical property to intellectual property and to the legal rights inherent in intellectual property. Though the shift may appear glacial, its impact on legal and economic risk is beginning to be felt.

Over the past half-century, the increase in the value of raw materials has accounted for only a fraction of the overall growth of U.S. gross domestic product (GDP). The rest of that growth reflects the

embodiment of ideas in products and services that consumers value. This shift of emphasis from physical materials to ideas as the core of value creation appears to have accelerated in recent decades.

Technological advance is continually altering the shape and nature of our economic processes and, in particular, is promoting the trend toward increasing conceptualization of U.S. GDP. The size of our radios, for example, has been dramatically reduced by the substitution of transistors for vacuum tubes. Thin fiber optic cable has replaced huge tonnages of copper wire. New architectural, engineering, and materials technologies have enabled the construction of buildings enclosing the same space with far less physical material than was required, say, 50 or 100 years ago. More recently, mobile phones have markedly downsized as they have improved. The movement over the decades toward production of services requiring little physical input has also been a major contributor to the marked rise in the ratio of constant dollars of GDP to ton of input.

This dramatic shift toward product downsizing during the past half-century stems from several causes. The challenge of accumulating physical goods and moving them in an ever more crowded geographical environment has clearly resulted in cost pressures to economize on size and space. Similarly, the prospect of increasing costs of discovering, developing, and processing ever-larger quantities of physical resources has shifted producers toward downsized alternatives. This shift appears effectively to have answered the dire concerns that were expressed, in a report from the Club of Rome three decades ago, about the prospects of running out of the physical resources that allegedly were necessary to support our standards of living. Another cause of product downsizing is that, as we moved the technological frontier forward and pressed for information processing to speed up, the laws of physics required the relevant microchips to become ever more compact.

More generally, in the realm of physical production, where scarce resources are critical inputs, each additional unit of output is usually more costly to produce than the previous one; that is, production, at least eventually, is characterized by increasing marginal cost. By contrast, in the realm of conceptual output, much of production is characterized by constant, and perhaps even zero, marginal cost.

For example, though the set-up cost of creating an on-line encyclopedia may be enormous, the cost of reproduction and distribution may be near zero if the means of distribution is the Internet. The emergence of an electronic platform for the transmission of ideas at negligible marginal cost may, therefore, be an important factor explaining the recent increased conceptualization of the GDP. The demand for conceptual products is clearly impeded to a much smaller degree by rising marginal cost than is the demand for physical products.

But regardless of its causes, conceptualization is irreversibly increasing the emphasis on the protection of intellectual, relative to physical, property rights. Before World War I, markets in this country were essentially uninhibited by government regulations, but they were supported by rights to property, which in those years largely meant physical property. Intellectual property - patents, copyrights, and trademarks - represented a far less important component of the economy, which was mainly agricultural. One of the most significant inventions of the nineteenth century was the cotton gin. Perhaps it was a harbinger of things to come that the intellectual-property content of the cotton gin was never effectively protected from copiers.

Only in recent decades, as the economic product of the United States has become so predominantly conceptual, have issues related to the protection of intellectual property rights come to be seen as significant sources of legal and business uncertainty. In part, this uncertainty derives from the fact that intellectual property is importantly different from physical property. Because they have a material existence, physical assets are more capable of being defended by police, the militia, or private mercenaries. By contrast, intellectual property can be stolen by an act as simple as broadcasting an idea without the permission of the originator. Moreover, one individual's use of an idea does not make that idea unavailable to others for their own simultaneous use. Even more importantly, new ideas - the building blocks of intellectual property - almost invariably build on old ideas in ways that are difficult or impossible to trace. From an economic perspective, this provides a rationale for making calculus, developed initially by Leibnitz and Newton, freely available, despite the fact that those insights have immeasurably increased wealth over the generations. Should we have protected their claim in the same way that we do for owners of land? Or should the law make their insights more freely available to those who would build on them, with the aim of maximizing the wealth of the society as a whole? Are all property rights inalienable, or must they conform to a reality that conditions them?

These questions bedevil economists and jurists, for they touch on some fundamental principles governing the organization of a modern economy and, hence, its society. Whether we protect

intellectual property as an inalienable right or as a privilege vouchsafed by the sovereign, such protection inevitably entails making some choices that have crucial implications for the balance we strike between the interests of those who innovate and those who would benefit from innovation.

In the case of physical property, we take it for granted that the ownership right should have the potential of persisting as long as the physical object itself. In the case of an idea, however, we have chosen to strike a different balance in recognition of the chaos that could follow from having to trace back all the thoughts implicit in one's current undertaking and pay a royalty to the originator of each one. So rather than adopting that principled but obviously unworkable approach, we have chosen instead to follow the lead of British common law and place time limits on intellectual property rights.

It is, thus, no surprise that, as a result of the increasing conceptualization of our GDP over the decades, the protection of intellectual property has become an important element in the ongoing deliberations of both economists and jurists.

Of particular current relevance to our economy overall is the application of property right protection to information technology. A noticeable component of the surge in the trend growth of the economy in recent years arguably reflects the benefits that we have derived from the synergy of laser and fiber optic technologies in the 1960s and 1970s. This synergy has produced very little that is tangible in information technology. Yet the information flow that it facilitates has fostered the creation of vast amounts of wealth. The dramatic gains in information technology have markedly improved the ability of businesses to identify and address incipient economic imbalances before they inflict significant damage. These gains reflect new advances in both the physical and the conceptual realms. It is imperative to find the appropriate intellectual property regime for each.

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If our objective is to maximize economic growth, are we striking the right balance in our protection of intellectual property rights? Are the protections sufficiently broad to encourage innovation but not so broad as to shut down follow-on innovation? Are such protections so vague that they produce uncertainties that raise risk premiums and the cost of capital? How appropriate is our current system - developed for a world in which physical assets predominated - for an economy in which value increasingly is embodied in ideas rather than tangible capital? The importance of such questions is perhaps most readily appreciated here in Silicon Valley. Rationalizing the differences between intellectual property rights as defined and enforced in the United States and those of our trading partners has emerged as a seminal issue in our trade negotiations.

If the form of protection afforded to intellectual property rights affects economic growth, it must do so by increasing the underlying pace of output per labor hour, our measure of productivity growth. Ideas are at the center of productivity growth. Multifactor productivity by definition attempts to capture product innovations and insights in the way that capital and labor are organized to produce output. Ideas are also embodied directly in the capital that we employ. In essence, the growth of productivity attributable to factors other than indigenous natural resources and labor skill, is largely a measure of the contribution of ideas to economic growth and to our standards of living.

Understanding the interplay of ideas and economic growth should be an area of active economic analysis, which for so many generations has focused mainly on physical things. This work will not be easy. Even as straightforward an issue as isolating the effect of the length of patents on overall economic growth, a prominent issue recently before our Supreme Court, poses obvious formidable challenges. Still, we must begin the important work of developing a framework capable of analyzing the growth of an economy increasingly dominated by conceptual products.