THE INCENTIVE TO INNOVATE UNDER ALTERNATIVE PROPERTY RIGHTS

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Introduction

The idea of economic development dominates both the aspirations and the public policy of most countries today. However only capitalist countries have done something about it. The United States, Western Europe, Japan, Hong Kong, and a few other places are true islands of economic affluence in a world that is terribly poor. If overpopulation has created poverty in India, why are people in Hong Kong so much better off? If an inadequate resource base is responsible for poverty in China, why is a resource-poor country like Japan doing so well? The Soviet Union is well-endowed with resources but its leaders are having a rather hard time clothing, feeding, and housing their people. For centuries the Texas plains were among the most uninviting areas of the world; that is, until the incentive effects of a private property, capitalist economy transformed them into one of the most affluent regions on earth.

It is a myth to assert that the shortage of capital is holding back economic development in Eastern Europe, Africa, and Asia. Capital is a very mobile resource which is continuously and untiringly looking for higher yield opportunities. The flow of capital from the North to the South and from the West to the East has not been sufficient to equalize marginal yields, because of political instabilities, currency controls, and/or attenuated property rights in noncapitalist countries. Also, governments of many countries have either inflated their respective economies, or overtaxed their people, or mortgaged their country's resources to foreign creditors, and all of that in the name of economic growth. High growth rates, however, are political

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objectives. They give the economist something to measure, the bureaucrat something to shoot at, and the ruling elite something to shout about. A high rate of economic growth is neither an indicator of economic development nor evidence of its absence.

Empirical evidence carries a simple but true message: Capitalism has done more for the common man than socialism. The purpose of this paper is to establish the link between property rights structures and economic development. To accomplish this objective we shall look into the incentive effects of property rights in Yugoslavia on the flow of innovations. In that sense the paper departs from the general tendency in the property rights literature to analyze the effects of legal structures on the allocation of resources.

Innovation and Economic Development

Innovation means doing something that has not been done before. It could be the development of a new good, the opening up of a new market, a new source of supply, or a new method of production. Innovation diverts resources from previous uses and in the process changes the index of significance of inputs relative to output.[1]

Operationally, innovation is an addition to the set of opportunity choices. It provides the community with a choice between the old ways and a new alternative. A voluntarily accepted innovation makes the community better off. How do we know that? If the community preferred the old ways the innovation would have failed, as indeed many innovations do. However, the community that is compelled by the state or another authority to accept innovation is not necessarily better off.

Innovation refers to changes in the community's set of choices. Moreover it *internalizes* those changes. A successful innovation offsets the law of diminishing returns, and takes the economy from the old to a new equilibrium (Pejovich 1965). The effects of innovation could not then be analyzed within the neoclassical analytical framework.

Innovation introduces a novelty into economic life. It brings about a qualitative change rather than a measurable quantitative growth in the economy. To insist on measuring the effects of innovation misses the point about its true role in society. For example Martens and Young (1979) made an attempt to provide a comparison between the flow of innovations in the Soviet Uniion and in the United States. They concentrated on the number of technical inventions and the

[1]My treatment of innovation and its role in society is Schumpeterian.

speed of their implementation. This kind of attempt to measure economic development ignores the most relevant issue: What is the vehicle by which the community evaluates the innovation? Technical changes could mean a qualitative improvement in the community's well-being; they could also mean that the community is going to be getting more of something it does not want. *Voluntary* acceptance of innovation enriches the community's welfare. It internalizes the effects of innovation. Thus voluntary acceptance of innovation is a major or true source of economic development.

Innovation cannot be planned. Business firms and governments cannot simply decide to have three innovations per month. Innovation is triggered by the individual who perceives an opportunity to do something that has not been tried before. Innovation is a consequence of his ingenuity.[2] The innovator has no previous data to count on. He faces the risk of doing something which is new—people tend to resist changes. Innovation then depends on man's ingenuity, his guess about people's preferences and incentives to accept the risk of failure. *Innovation is then individualistic in its origin and social in its consequences.* The bottom line is that the community should seek and implement economic policies that promise—and that is all they can do—to maximize the flow of innovation.

The problem of economic development boils down to a search for property rights structures that promise to (1) increase the number of people who can innovate, (2) enhance the individual's incentives to innovate, and (3) provide a mechanism for the integration of innovation into economic life (that is, provide for its acceptance or rejection by the community).

With respect to points (1) and (2) the crucial questions are: Who can innovate and what are the innovator's incentives to accept the risk of failure? To be able to innovate one must have the right to acquire resources, the freedom to negotiate their uses, and sufficient incentives for the risk he takes. With respect to point (3) the issue is to identify the community's judgment of the innovation's costs and benefits.

The right of ownership and contractual freedom are conducive to maximizing the flow of innovation in the community. The right of ownership is a necessary means for the dispersion of power in a society. The right of ownership means that everyone in the community is free *to acquire resources.* Contractual freedom replaces orders from the top with voluntary exchange in competitive markets.

[2]For a very telling story about the frustrations of an innovator in a socialist state, see Dudincev (1957).

It provides the innovator with *the ability to act in the market.* Contractual freedom increases the flow of information about the effects of innovation. It lowers the cost of the integration of innovation and its consequences into relative market prices. In this manner, freedom of contract serves as a vehicle by which the community judges, evaluates, and finally prices the costs and benefits of innovation. The right of ownership and contractual freedom offer incentives to the individual to accept the risk and uncertainty about the outcome of innovation. The gains come from the market's acceptance of innovation. A successful innovation yields benefits in excess of what the bundle of resources used by the innovator was earning before. Positive profits are then created within the system by way of the emergence of new exchange alternatives that enough people seek to exploit. In the process the innovator has a temporary monopoly position that enables him to capture those gains until they are competed away by imitators. In the end the community gets the "right" amount of what it prefers.

The right of ownership and contractual freedom are institutions that are *specific* to capitalism. They maximize the number of people who could innovate, generate incentives for potential innovators to accept the risks of failure, assure the potential innovator of the ability to act in the marketplace, and quickly integrate the costs and benefits of innovation into relative market prices. *These two institutions are conceptually powerful and perhaps necessary requirements for successful economic development.*

There exists a relationship between property rights and economic development. As property rights change, incentives to innovate and consequently the rate of economic development will change as well. Let us now look into the incentive effects of property rights in Yugoslavia on economic development in that country.

Innovation and Economic Development in Yugoslavia

Most research by western scholars has traditionally emphasized the macroeconomic aspects of socialist economies. A predictable outcome of this emphasis on the system of planning and macroeconomic analysis has been a rather poor ex ante understanding of the economic forces at work in socialist countries. Let us look at two examples.

In the 1950s a relatively high rate of growth of the Soviet economy was taken for granted. G. Warren Nutter was among the very few economists who questioned the reported growth rate in the Soviet

Union, doubted the ability of the Soviet Union to continue to grow at the same rate, and denied the importance of economic growth policies for human welfare. Nutter based his observations and predictions on the standard price theory adjusted to take into consideration the incentive effects of property rights. Nutter was castigated for defying the traditional wisdom. Yet history has validated Nutter's predictions about the Soviet economy (see Nutter 1983).

The 1965 economic reform in Yugoslavia was acclaimed as a major step in the direction of greater efficiency. The reform was supposed to transfer decision-making powers from the bureaucracy to the employees of business firms. Horvat claimed that "self-management accelerated growth of output, and technical progress beyond anything known before" (see Bajt 1983). Vanek thought that self-management should be tried everywhere, and some German economists linked the idea of codetermination with the Yugoslav system of self-management.

In the late 1960s a property rights micro-model was developed that suggested the 1965 reform would generate inflation, low savings, high unemployment, and serious liquidity problems (Furuboth and Pejovich 1974). Moreover it suggested that those problems in Yugoslavia are generated by the labor-participatory system itself. Each and every one of these predictions has turned out to be correct.

The point is that price theory has one advantage over the analysis of aggregate variables: It is capable of contributing to knowledge. In the field of comparative studies, the price theory adjusted for the effects of various property rights has led to a simple general conclusion: *There can be no efficient markets without private property rights* (Nutter 1968). This paper argues that *there can also be no economic development without private ownership.*

Major institutional features of the Yugoslav economic system are (1) the state ownership of capital goods, (2) the employees' ownership of the returns from capital goods held by the firm, (3) the employees' right to govern the firm, (4) the system of quasi-voluntary contracts between firms, institutions, and various agencies, and (5) the substitution of bank credit for the system of administrative distribution of investable funds. When this institutional framework is translated into the bundle of rights that defines ownership in the firm in Yugoslavia, the following picture emerges:

- The employees own the residual.
- The employees have the right to fire and hire the firm's management, including the director.

- The employees can neither sell the rights specified above nor continue to enjoy them when they leave the employ of the firm.

The right to capture the residual in Yugoslavia is contingent on the association of one's *live* labor with the firm's physical assets.[3] When this association ceases to exist, one's right to capture the residual ceases as well.

The analysis of the relationship between the self-managed economy of Yugoslavia and economic development requires that we assess the effects of property rights structures on the flow of innovation in that country. In accordance with our discussion above, the three following questions are raised: First, who can innovate in Yugoslavia; that is, who is in the position to acquire resources and determine their uses? Second, what incentives does the potential innovator have to accept the risk and uncertainty associated with innovation? Third, how and to what extent does the innovation have to pass the market test?

Who Can Innovate in Yugoslavia

The legal rules limit the right of ownership in Yugoslavia to a few specific assets. Those rules constrain the ability of individuals who are not employed by business firms to acquire and use resources. The set of people who can innovate in Yugoslavia, for all practical purposes, is reduced to the working collective. Some limitations exist within the collective as well. Individual employees cannot acquire and use resources, only the collective can. That is, no individual employee is in the position to translate his perception into actual outcome. He has to sell his idea to the workers' council, which is the highest governing body in the Yugoslav firm. The firm's director is perhaps the only individual who can use resources to implement new ideas. However even the director must seek the workers' council's approval for any major change in the firm's scale of operations (Pejovich 1973). By law the workers' council must include skilled workers, semiskilled workers, as well as blue-collar workers. Thus the workers' council is a group of people with totally diverse interests, different philosophical backgrounds, unequal technical knowledge, and different age distribution. Their understanding of a new venture, ability to comprehend its consequences, and judgment of expected benefits cannot be the same. Moreover the attitude of the members of the workers' council toward the risk is likely to differ from one member of the council to another. Compared to the regime

[3]This is a constitutional requirement in Yugoslavia.

of private property rights, the prevailing property relations in Yugoslavia must be expected to impede the flow of innovation in the firm.

Incentives to Innovate in Yugoslavia

The employees' right to capture the firm's earnings links the collective's decisions on the one hand and wages received by members of the collective on the other. The relationship between the collective's decisions and the workers' earnings is likely to be stronger in small firms. As the number of the employees increases, their perception of the relationship between their individual efforts and their inputs into decision-making processes on the one hand and take-home wages on the other tends to weaken. A worker who comes up with an idea that potentially may turn out to be a successful innovation will capture only a small fraction of the total gain from his innovation. The larger the size of the labor force, the smaller will be the incentive of the worker to make an effort to perceive new ideas and to sell them to the collective.

The system of property rights in Yugoslavia reduces the director's incentives to innovate as well. A successful innovation in Yugoslavia does not reward the manager as quickly and surely as it does in the West. A successful innovation in the West affects the price of the firm's stock and increases the manager's income because his job opportunities are now enhanced. It is much costlier to generate this kind of information about managers' performance in the markets without private ownership rights.

To understand the link between one's effort and his earnings in Yugoslavia, we shall look at two examples: professional athletes (small group) and the employees of the firm (large group).

Monetary compensation is a powerful and perhaps necessary vehicle for extracting a greater effort from professional athletes. Different methods of rewarding athletes in team-oriented sports stimulate different behavioral responses from individual players. The basic methods of compensation are: fixed payments and performance-oriented payments. The major difference between these two methods of compensation lies in the allocation of risk. Athletes' incomes are almost always a mix of fixed and performance-oriented payments. However, the relative importance of these two types of payments in their total compensation differs from one sport to another and from one country to another.

Fixed contractual salaries provide incentives for athletes to perform well as individuals, to concentrate on their *own* performances. The athlete's future marketability depends on his *own* performance in the field. The athlete has *less* incentive to monitor the performance

of his teammates, to extol them to a greater effort, and to subordinate his individual actions to the team's interest. It is not argued here that athletes feel no desire for the team to win. The point is that fixed contractual payments shift incentive structures away from joint effort by the team and toward individual performances. However, the method of compensation based on fixed contractual income provides incentives for the club to incur the cost of monitoring its players and of channeling their performance in the direction of joint effort by the team. A testable consequence of this method of compensation would be a relatively larger coaching staff.

When athletes' compensation is performance-oriented, an individual player has incentives to contribute to the team's joint effort, to monitor the performance of his teammates, and to subordinate his individual performance to the team's interest. A predictable consequence of the performance-oriented method of compensation is then a relatively smaller coaching staff; incentives to invest in monitoring activity shifts here toward the players themselves.

The method of payments to professional athletes in Yugoslavia is consistent with the principle of self-management—it is performance-oriented. An example discussed in this paper is the payment schedule used by Partizan, a leading Yugoslav soccer team. Information is for 1977. Earnings are expressed in dollars.

In 1977 the players received fixed monthly compensation from the club. Compensation ranged from $305 per month to $174 per month. For a professional athlete this scale is not very impressive. In the same year the average wage in Yugoslavia was about $230 per month. However, the players' income depended on the team's success in several different types of competition. The most important and certainly the longest (34 games) is the Yugoslav national soccer championship.

The players' compensation for participating in the Yugoslav national championship is based on the team's performance per unit. One unit consists of four championship games. Winning a game is counted as two points, a tie as one point, and a loss as zero points. That is, the team might have been credited by zero to eight points per unit of four games. The players were rewarded as follows:

Number of Points	Compensation
0–3 points	$0
4 points	$192
5 points	$613
6 points	$1,073
7 points	$1,380
8 points	$1,687

These rewards were received by all individual players regardless of their fixed monthly pay. Assuming that the team played four games per month, the difference in players' monthly earnings between winning 50 percent and 75 percent of their monthly games is quite startling.

If Partizan lost all four games, the lowest player's income in that month would be $174, or 75 percent of the Yugoslav average. But if the team won two out of four games, his monthly income would have been $366, or 159 percent of the national average. If Partizan won three games and lost one, the lowest player's income during that month would have been $1,247, or about 5.4 times above the Yugoslav average. Incidentally Partizan won the Yugoslav national championship in 1977 and each player received an additional bonus of $6,600.

The performance-oriented incentives are not so clearly visible in larger firms. Our discussion here is based on Table 1, which provides a concrete example of the Yugoslav firm (Pejovich 1980). The accounting period is from January 1, 1978 to June 30, 1978.

Several items in Table 1 require special comment because of their effects on the relationship between the property right structures in Yugoslavia and incentives.

Dohodak (value-added) is equal to the firm's total revenue less production expenses and depreciation. It is the most important category in the Yugoslav system of labor self-management. The working collective has incentives to minimize production expenses because there exists a positive relationship between the workers' present and future incomes on the one hand and the size of *dohodak* on the other. The republic and local government also have incentives to monitor expenses incurred by enterprises. Their tax revenues depend on the size of *dohodak*. An interesting feature of the Yugoslav tax system is that only custom duties and turnover taxes are paid into the federal budget.

The government closely monitors the financial transactions of Yugoslav firms. The watchdog is the Office for Social Bookkeeping. *Yugoslav firms can make payments to others neither directly nor through banks.* Financial transactions must first be cleared through the Office for Social Bookkeeping. In fact it is the Office for Social Bookkeeping which instructs banks to make payments on behalf of enterprises. The Office for Social Bookkeeping is primarily concerned with the legality of payments rather than their business justifications. At the same time the director of the firm, the management group, and other influential members of the collective (for example, the chairman of the workers' council), can increase their total

TABLE 1

DISTRIBUTION OF TOTAL REVENUE OF THE YUGOSLAV FIRM (In Dollars)

Total Revenue		21,405,972
Production Expenses		−18,725,928
Cost of goods	17,142,172	
Business expenses	1,527,680	
Bad debts	6,158	
Inventory adjustments	21,844	
Legal costs and penalties	1,797	
Depreciation		−91,166
Value-Added *(Dohodak)*		2,588,739
Fixed Legal Obligations		−44,595
Insurance premiums	28,421	
Disability compensation	1,123	
Land tax	10,441	
Entertainment and gift tax	2,444	
Solidarity fund (to alleviate damage caused by floods, and other disasters)	2,166	
Variable Legal Payments (dependent on the size of *dohodak*)		−310,181
Republic tax (7%)	89,473	
Education tax (5.5%)	69,604	
Tax for science (0.69%)	8,732	
Retirement & disabil. insur. (7.26%)	91,878	
Tax for child protection (1.81%)	22,906	
Health insurance (0.68%)	8,605	
Building fund (1.5%)	18,983	
Contractual Obligations		−458,230
Administration costs	130,055	
Interest and bank charges	309,701	
Trade association dues	10,869	
Civil defense	5,308	
Legal costs	1,797	
Residual (Enterprise Net Income)		1,775,372
Allocation to Business Fund		698,701
Allocation to Collective Consumption Fund		151,794
Allocation to Reserve Fund		64,709
Allocation to Wage Fund		860,168

Taxes for Wage Fund (32%)		273,107
County tax (1.41%)	12,128	
Social protection tax (0.52%)	4,472	
Education tax (8.11%)	69,760	
Culture tax (0.77%)	6,624	
Physical education tax (0.16%)	1,376	
Child protection tax (0.88%)	7,569	
Employment agency tax (0.24%)	2,065	
Retirement & disability tax (5.97%)	51,352	
Health tax (7.89%)	67,867	
Other taxes (5.8%)	49,888	
Net Wage Fund		587,061
Average Monthly Wage (330 employees)		296

SOURCE: *Contemporary Practice (Savremena Praksa)*, Belgrade: SDK (Social Accounting Service), 1978, p. 703.

compensation by way of the consumption of nonpecuniary goods such as frequent business trips, sponsorship of conferences, use of company cars, and banquets for business associates. While incentives to minimize production expenses exist in Yugoslavia, the positive costs of monitoring the director and his associates suggest that some unnecessary expenditures can be presumed.

Taxable *dohodak* is different from the firm's total *dohodak*. To calculate the plant's taxable *dohodak*, which in our case is $41,265,542, adjustments are made in the firm's actual *dohodak* of $2,588,378. The firm is allowed to subtract from its *dohodak* the amount equal to the employees' guaranteed income. A worker's guaranteed monthly income is 55 percent of the last year's average personal income in the county where the firm is located. Clearly, guaranteed monthly income varies from one locality to another and from one year to another. Other deductible expenses include contribution to the administrative cost of the firm, loans that the firm must make for the development of less-developed areas of the country, interest payments and other bank charges, insurance premiums, membership dues, contributions to the building fund, and subsidized meals for workers.

Taxes that are paid from the firm's *dohodak*, with one exception (the republic tax), are paid into the budgets of self-managing communities of interest. The institution called the self-managing community of interest has important bearings on the relationship between property rights and incentives in Yugoslavia. The provision of many services, such as welfare, health, education and retirement, is negotiated contractually by organizations that represent those who

supply specific services and organizations that represent those who demand them. They form self-managed organizations governing a region. For example, in the field of health, a self-managed agreement on the formation of a self-managed community of interest is made between self-managing organizations and other institutions representing those who are eligible by law to receive health services on the one hand and self-managing organizations which provide those services on the other (hospitals, clinics, medical institutes, pharmacies, and so on). Territorial boundaries of the regions are determined by such factors as the economic conditions of life in the area, homogeneity of the population, the area's geography and the availability of health services. The law specifies the minimum provision of services that must be provided by the self-managing communities of interest. However, contractual partners are free to negotiate the provision of additional services. They also negotiate the cost of services and determine taxes that would raise the required revenue. It means that taxes could vary from one region to another as well as from one year to another. Importantly, education, health protection, retirement, and other public services in Yugoslavia are not provided through state budgets. Taxes for these services are not paid into state budgets.

The *residual* belongs to the collective. According to Yugoslav law, the residual must be allocated among the business fund, the collective consumption fund, the reserve fund, and the wage fund. The workers' council determines the allocation of the residual among all these funds, as well as the distribution of the wage fund among the individual employees. However, the workers' council must publicly announce its distributional criteria well in advance or have them approved by the collective at the general meeting. In deciding the scheme for the distribution of the firm's residual, the workers' council is expected to adhere to distributional guidelines stated in self-management agreements that are explained below.

The distribution of the wage fund among the firm's employees is usually regulated in the following way: The workers' council attaches a certain number of points to each position in the firm. The criteria used to determine the number of points for each job usually include skill required, education, health risk, hardship, working conditions, and the like. Those are general criteria used in Yugoslavia, but the relative importance differs from one firm to another. In addition self-management agreements provide general guidelines for individual workers' councils. The firm's wage fund after taxes is divided by the total number of points. The value of a point is then multiplied by the number of points associated with each job, and the result is the employee's take-home income for that accounting period.

Incentives to innovate clearly exist in the firm, but they are not strong enough to offset risk and effort. Suppose the manager is paid five times the average monthly wage; that is, $1,480. In accepting the risk and effort of innovating and raising the firm's *dohodak* by 10 percent, or $43,145, the manager will add only about $148 to his salary. And the absence of financial markets will impede his chances of capturing even those meager gains in the form of higher income.

Taxes paid from the wage fund are primarily paid into the budgets of local political units and self-managing communities of interest. These taxes vary from one region to another and their uses are specified. As was pointed out earlier, the Yugoslav tax system relates the benefits of various public activities financed through taxes to their costs. There is a relationship between the cost of public services provided in Yugoslavia at the local level and the costs borne by the collective. This fact provides incentives for the collective to try to argue for benefits that are commensurate with costs. It also provides incentives for those who offer public services to seek cost-reducing innovations.

The Integration of Innovations into Social Economy

The market for consumer goods and the system of contractual agreements assure members of the community that those innovations that are beneficial to it will eventually be incorporated into social life. Such an assurance does not exist in other socialist states. While the market for consumer goods in Yugoslavia works the way competitive markets work elsewhere, the system of contractual agreements is a unique phenomenon. The employees in the Yugoslav firm are considered to be contractual partners in the team decision-making processes. Plants within each firm negotiate written contracts among themselves. These contracts specify their mutual rights and obligations. Institutions and firms in related activities negotiate contracts that specify the pooling of resources, criteria for the distribution of income, and other business matters. These contracts are called self-management agreements (*samoupravni sporazumi*). Groups bound together through broad common interests, such as firms, trade associations, labor unions, institutes, and government bureaus, negotiate the so-called social contracts *(drustveni ugovori)* that specify their mutual rights and obligations. Provision of welfare, health, education, and other services, as we have already noted, is negotiated between those who demand social services and those who supply them. In this manner contractual agreements encompass the entire social and economic life in Yugoslavia.

Contractual agreements are not voluntary. They are mandated by law and the basic terms are frequently stipulated in advance (for example, the minimum health care). However, within these constraints, the terms of contracts are freely negotiated among the participants. An immediate consequence of the Yugoslav system of contracts is to *reduce* the role of the state in regulating and controling economic life. The difference between contracts in Yugoslavia and contracts, say, in the United States is with respect to the role of consideration. In the United States the courts are not supposed to look into the adequacy of consideration, only its existence. The presumption is that the parties involved know better (than the judge) their preferences and the relative values of things that are being exchanged. In Yugoslavia the adequacy of consideration is controled by the state. This implies some price controls and the consequent allocation effects. However, a dynamic, and perhaps the most important, consequence of the system of contractual agreements in Yugoslavia is that it creates incentives for the participants to seek ever greater freedom for themselves in negotiating the terms of contractual agreements.

State Ownership of Capital Goods, Restrictions on Contractual Freedom, and Economic Development in Yugoslavia

The state ownership of capital goods precludes *the capitalization of the future benefits of a successful innovation into their present market value.* The employees of the Yugoslav firm are free to exchange their current consumption for higher future income by leaving a part of the firm's earnings for investment in new ideas. Yet they can neither sell their claims to future earnings in future investments made by the firm during the period of their employment nor continue to receive their share of those earnings once they leave the employ of that firm. It follows that the employees capture the benefits from innovation in the form of higher wages. When a worker leaves the firm, he loses all his claims to the future returns despite the fact that his earlier sacrifice of current income (that is, his share of investment) helped the firm to finance innovation. Given the cost of innovation, the relationship between the worker's time horizon (that is, the worker's expected employment by the firm) and the period of time over which the benefits of a successful innovation are to be received becomes important. Incentives to innovate will tend to fall as the worker's time horizon gets shorter relative to the expected life of innovation.

The nontransferability of the worker's right of ownership in the firm's earnings means that prevailing property rights structures in Yugoslavia provide no room for diversification in risk bearing among individual workers whose risk aversion is not likely to be the same.[4] Thus the employees of the Yugoslav firm must have incentives to seek those investment ventures and to prefer those innovations whose outcome is to shift income forward and postpone cost. That is, the Yugoslav economic system provides incentives for the collective to seek innovations that maximize the near-term cash flow.

A constitutional requirement in Yugoslavia, which stems directly from the ideology that gave birth to the state ownership of capital goods, is that "live labor must be combined with capital goods in order to receive the residual." The late Edward Kardelj, a leading Yugoslav theoretician and party leader, wrote (1981, p. 147):

> The social and historical substance of self-management lies in the emergence of a form of production relations based on state ownership of capital.... The worker appropriates on the basis of his work *directly*, free from all forms of wage labor relations....

A consequence of the requirement that the returns from capital assets belong to workers who use them is to reduce opportunities for the members of the collective to seek entrepreneurial gains outside their firm. Some years ago this point was recognized by Bajt (1968, p. 3):

> If one wants to develop innovating activity in socialist enterprises, one has to provide enterprises with adequate legal rights in order to exchange factors and products in as free a manner as possible. ... I would not be surprised, therefore, if somewhere in the future this will find its expression in giving enterprises property rights in their means of production.

In the late 1960s the Yugoslav firm was free to determine the allocation of its net earnings between the wage fund and other funds. The share of the wage fund in the firm's net earnings rose from 60 percent in 1964 to over 80 percent in 1970. The Yugoslav government was looking for a different outcome. The government wanted business firms to increase the share of their earnings allocated for investment purposes. The Yugoslav leaders clearly misread incentives inherent in the prevailing property right structures in that

[4]On the general point that lack of private property rights precludes risk diversification, see Jensen and Mechling (1979).

country. The 1965 reform created incentives for one type of behavior while the state expected different behavior.

In the early 1970s the government decided to interfere with the allocation of resources within the firm and to lower the ratio of wages to retained earnings. The government also decided to refrain from reintroducing direct administrative controls. As we have seen, the vehicles used by the government were to enlarge the role of contractual agreements and to impose constraints on their terms. The law required firms, institutions, and other economic organizations to negotiate social contracts stipulating, among other things, the criteria for allocating enterprises' net income. The government reserved for itself, so to speak, the right to assess the adequacy of consideration.

In order to examine the effects of governmental controls in Yugoslavia on incentives to innovate, let us consider the 1982 social contract for the city of Belgrade and compare it with the social contract for 1972.[5] The social contract stipulates rules for the allocation of enterprises' net income between the wage fund and retained earnings.[6] The crucial variable is the ratio of net income or earnings (E) to adjusted labor (L); that is, E/L.

The term "adjusted labor" refers to a labor-force figure adjusted for differences in skill and education levels, which vary among firms. The approach used in Belgrade in 1972 and 1982 was to attach a coefficient to each level of skill and education. The *adjusted* labor force was then obtained for each firm by multiplying the number of employees in each category by the relevant coefficients and summing the products. The coefficients used in 1972 and 1982 were as follows: 1.00 for an unskilled worker; 1.20 for a semiskilled worker or a worker with less than a high school education; 1.70 for a qualified worker or a worker with a high school education; 2.20 for a highly qualified worker; 3.00 for a worker with a college education; 3.30 for a worker with a master's degree; and 3.80 for a worker with a doctorate.

After determining all the enterprises' labor-adjusted earnings, the E/L ratios are stated in terms of index numbers, with the average earnings per adjusted labor set equal to 100. The social contracts then stipulate the share of earnings that must be retained (R/E) at each different E/L ratio. Since the share of earnings going to the wage fund (W/E) and the share of earnings retained (R/E) must sum to 100, W/E is determinate. The product of the E/L and W/E ratios gives us

[5]See the *Collection of Regulations* (1982).

[6]Earnings are retained for allocation to the business fund, the collective consumption fund, and the reserve fund. Hereafter we shall simply refer to these funds as the "internal funds" or retained earnings.

the ratio of wages per adjusted labor (W/L) at each different E/L ratio. These ratios are presented in Table 2, which shows the allocation of net income or earnings in Belgrade enterprises under the social contracts in 1972 and 1982.

The data in Table 2 can be used to help uncover the system of rewards implicit in the 1982 social contract for Belgrade and to make comparisons with the incentive structure in 1972. Figure 1 plots the allowable wage per worker (W/L) against earnings per worker (E/L), and shows that greater earnings by the firm yield only modest gains to workers in terms of current rewards. For example, in 1982 if earnings per worker doubled from 100 to 200, the wage per worker would have increased from 78 to 108, or only by 38 percent. The curve relating W/L to E/L moves further and further away from the 45° line (the maximum reward line) as earnings per worker are increased. From the point of view of the collective, this mandated reward system, which constrains the allocation of earnings between the wage fund and retained earnings, is inefficient. The fact that the state needs social contracts in order to increase the share of retained earnings is the best evidence that workers would prefer to allocate a larger share of the firm's earnings to the wage fund. Thus social contracts for both years penalize workers in an efficient firm for their efforts toward still greater efficiency.

What can we say about the effects of social contracts on incentives to innovate? Innovation is a risky venture and a successful innovation yields large benefits. In fact the benefits must be large and capturable to alleviate the risk. Figure 1 tells us that the larger the expected benefits from innovation, the greater is the distortion from the 45° line. Since the benefits expected from retained earnings (that is, from investment) are not transferable in Yugoslavia and can be captured only while a worker remains employed by his firm (the time horizon problem), the 1972 and 1982 social contracts can be said to have reduced the collective's incentives to take risks associated with innovation. Moreover Figure 1 suggests that the incentives to innovate have been reduced between 1972 and 1982. In comparison with 1972, the 1982 social contract clearly reduces the collective's incentives to seek risky ventures.

Conclusion

We can summarize our discussion on the relationship between property rights in Yugoslavia and incentives to innovate as follows. First, the employees' right to govern the firm transfers the right to acquire and use resources needed for innovation from the

TABLE 2

SOCIAL CONTRACT FOR BELGRADE ENTERPRISES, 1972 AND 1982

Earnings per Adjusted Labor (E/L)	Allocation to Internal Funds (R/E)		Allocation to Wage Fund (W/E)		Allowable Wage per Worker (W/L)	
	1972	1982	1972	1982	1972	1982
260	53	57	47	43	122	112
250	52	55	48	45	120	112
240	51	54	49	46	118	110
230	49	52	51	48	117	110
220	48	50	52	50	114	110
210	45	48	55	52	115	109
200	44	46	56	54	112	108
190	43	43	57	57	108	108
180	42	40	58	60	104	108
170	41	37	59	63	100	107
160	40	33	60	67	96	107
150	38	29	62	71	93	104
140	37	28	63	72	88	101
130	35	27	65	73	84	95
120	33	25	67	75	80	90
110	30	24	70	76	77	84
100	27	22	73	78	73	78
90	23	20	78	80	69	72
80	19	15	81	85	65	68
70	13	11	87	89	61	62
60	5	5	95	95	57	57

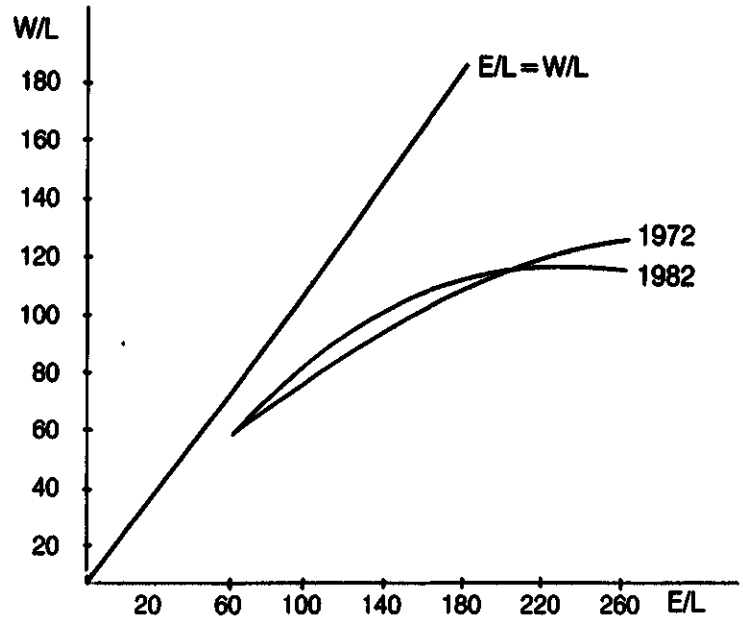

FIGURE 1
EFFECT OF SOCIAL CONTRACTS ON THE ALLOCATION OF NET INCOME

bureaucracy to the working cooperative. Therein lies the major difference between the Soviet economy and the Yugoslav economy. Second, the employees' right to appropriate the firm's earnings establishes a link between the outcome of innovation and the employees' welfare. Third, the market for consumer goods and the system for contractual agreements assures the community that the role of bureaucracy in compelling the community to accept innovation is reduced.

As we look at the relationship between the property rights structures in Yugoslavia and incentives to innovate, we must conclude that in comparison with other socialist states in the East, the incentives to innovate in Yugoslavia are significantly greater. However, with respect to the capitalist West, they are significantly smaller. Only members of the working collective can innovate in Yugoslavia. Within the working collective, decisions to innovate must be approved by the collective as a whole. The link between innovation and its economic benefits are not as strong as they are in the West.

The process of integrating innovation into the social system in Yugoslavia differs from other socialist states. In the East, innovation

is integrated into social life *via* either approval by the ruling elite or informal managerial practices (Furubotn and Pejovich 1974). In Yugoslavia the role of bureaucracy is still there, but it is diminished. The major factor that controls the integration of innovation into social life is its acceptance by the community *via* the market for consumer goods and various types of contractual agreements. The integration of successful innovation into social life also differs between Yugoslavia and the West. The right of ownership and contractual freedom in the West provide a low-cost vehicle for speedy integration of the cost and benefits of innovation into relative price structures. In Yugoslavia the terms of contractual agreements are far from being freely negotiated. There are also price controls in the market for consumer goods. Thus the integration of successful innovation into the social life cannot be expected to be quick and accomplished at as low a cost as in the West.

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"THE INCENTIVE TO INNOVATE UNDER ALTERNATIVE PROPERTY RIGHTS": A COMMENT

Deborah Duff Milenkovitch

I am in broad agreement with Pejovich's description of property rights in Yugoslavia. He has defined a complex system of property rights very clearly and has established beyond any doubt that the property rights are such as to provide a stronger relationship between enterprise earnings and individual earnings than is true in conventional socialism, and a weaker one than is true in capitalism (Pejovich 1984). Thus the system of workers' management is an intermediate stage in the property rights continuum. He has also clearly pointed to the greater role of the market mechanism in Yugoslavia and its importance in providing greater opportunities for social validation of resource allocation decisions, a social validation that is lacking in the socialist countries of Eastern Europe.

Pejovich evaluates these conclusions about Yugoslavia's property rights in a framework in which the existence of full property rights by individuals and full social validation of innovation through the market mechanism becomes the *only* standard by which to evaluate a property rights system. This approach has two limitations. First, in order to establish the correspondence between full rights of ownership and freedom of contract and social well-being, Pejovich must make some additional (unstated) assumptions about the effects of changes in property rights on the performance of the system. I shall try to identify these assumptions and their role in his conclusions. Second, in arguing for the superiority of a system on the grounds of logic, he departs from his own standards of social evaluation by the choices of the individuals faced with these alternative systems; his argument thereby becomes inconsistent. By identifying these unstated assumptions and logical inconsistencies, and removing them from

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the argument, we can better see what we really know, and where to advance our knowledge about the impact of property rights on the welfare of the common man.

Pejovich's Argument about Innovation and Property Rights

Pejovich discusses the effect of the system of property rights on the incentive to innovate. He uses the concept of innovation in its Schumpeterian sense. The entrepreneur ceaselessly scans the horizon searching for new opportunities, either new ways to produce or new products to produce. The entrepreneur is motivated by the prospect of the short-term gain from being the first to see and try a new idea; in the long run the profits will be eroded as others duplicate his activity. Thus it is the entrepreneur who brings new methods into production; and it is the process of creative destruction of the old and the successful imitation of the new that propels society forward.

The elements of Pejovich's argument can be listed as follows:

1. Innovation means an addition to the set of opportunity choices.
2. The community faces a choice between the old way and the new alternative.
3. A voluntarily accepted innovation makes the community better off.
4. The property rights structure influences (a) the number of people who can innovate; (b) the incentives for individuals to integrate; and (c) the mechanism for acceptance or rejection of the innovation by the community.
5. The right of ownership means that everyone in the community is free to acquire resources for the purpose of innovation. The right of ownership offers incentives to the individual to accept risk and uncertainty. Contractual freedom means that individuals are free to make their own choices in accordance with their own preferences. Contractual freedom serves as a vehicle by which the community accepts or rejects the innovation resulting from entrepreneurial activity (social validation).
6. When the right of ownership is combined with contractual freedom, we have the characteristic property rights of capitalism.[1]

[1]The notion of ownership involves a number of different rights which in capitalism are bundled together (Pejovich 1965; Milenkovitch 1971): (a) The right to use property for personal production and consumption; (b) the right to use property personally for market production and to sell the produce and retain the proceeds; (c) the right to rent property to others and to receive income therefrom; (d) the right to keep property

7. These rights are necessary for optimal innovation. The right of ownership and contractual freedom maximize the number of people who can innovate, generate optimal incentives for potential innovators to accept the risks of failure, and most efficiently provide for social evaluation of the innovation through the market mechanism.

Limitations of the Argument

The argument seems logically convincing. A comparison of Langean market socialism, worker-managed market socialism, and competitive capitalism (under conditions of self-interested behavior and risk bearing) shows that given certain assumptions, no system can perform better than competitive capitalism (Milenkovitch 1983). Further, only systems with institutions that mimic capitalist institutions can emulate competitive capitalism's superior entrepreneurial performance.

This conclusion is reached by comparing the behavior of the alternative system of property rights with the behavior of the competitive capitalist system. The conclusion rests on the validity of the comparison; that is, *on the assumption about what things remain unchanged when the system of property rights changes.* Let us explore what things besides the incentive to take risks for expected returns and social valuation of the results through the market mechanism might change as a function of property rights.

As Pejovich notes, the incentives for shirking may be different in worker-managed as opposed to capitalist firms. However, he does not relate this observation to the question of the choice of technique across systems. There may be systematic differences across systems, based on the need to monitor and control labor performance, in the kinds of innovations that pay off (Noble 1979). Thus, in a capitalist system, certain kinds of innovations could fail the test of the market because under capitalist production relations they have low returns due to the high cost of monitoring the behavior of the workers. Therefore the techniques chosen may differ across systems. If workers had less incentive to shirk and more incentive to monitor one another in an alternate property rights system, highly productive

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without using it; (e) the right to alter the nature of property; (f) the right to use up or deplete property; (g) the right to sell physical property; (h) the right to liquidate a going concern; and (i) the right to sell shares of a going concern.

When these property rights are bundled together, we have the form of ownership characteristic of capitalism. Other systems—feudalism, slavery, socialism—can be distinguished by different bundling of the property rights. When the right of ownership is combined with contractual freedom, we have the characteristic rights of capitalism.

techniques, rejected under capitalism, might come into operation. As a result the production function need not be the same across systems.

Pejovich assumes individual agents who maximize utility responding to the prices offered for supply of factors of production and risk bearing. Utility is a function of income and independent of the system of property rights. To the extent that other factors motivate the supply of entrepreneurship—pride in one's own work, value placed on external recognition not translated into monetary terms, altruism—outcomes may be different. The significance of all three factors might be greater under alternative property rights that are not focused solely on financial returns to individual suppliers of factors.

The workers on the production line may have specific knowledge about ways to improve the production process, due to their specific on-the-job training. An individual worker may have an idea, but the costs borne by the individual worker of obtaining the resources to implement his idea may be high relative to the gain borne by the individual. Pejovich focuses on the disincentive to innovate when the benefits are shared in a cooperative, but does not give equivalent treatment to the possible positive incentive to innovate due to the shared nature of the start-up costs. If an alternate system of property rights increases the likelihood of contributions from the workers, that system may have higher gains in productivity from innovations.

The capacity to internalize externalities might differ across systems. For example, there could be higher subjective levels of satisfaction or lowering of stress associated with work after an innovation has occurred. To the extent that not all of the gains of the innovation are appropriable by the entrepreneur, and some of them may be appropriated by the workers, worker-managers may be better situated to internalize the externalities.

Pejovich's conclusions have to be reconsidered under the following conditions: (a) If the set of usable innovations is greater under workers' management; (b) if the incentives to provide innovations is greater for any given monetary reward; (c) if the expected productivity of workers' contributions to innovations are greater than those of citizens at large; or (d) if the possibilities of internalizing the externalities are different. Thus we can *logically* draw up a different set of assumptions about the nature of reality under alternative sets of property rights. Given these alternative assumptions the property rights system will help determine incentives, ability to internalize the externalities, location of knowledge most likely to yield productive innovations, appropriability of the returns to an innovation, impact on technological choice of the need to monitor, and the distribution

of shared costs and shared benefits. Such assumptions could *logically* yield conclusions different from those Pejovich reaches. To discriminate among alternative hypotheses about reality, we have to resort to some form of measurement and hypothesis testing. Otherwise we are stuck within a sterile logical deduction exercise in which the assumptions, as always, contain the conclusions.

The Relationship of Property Rights to Development

Pejovich relates his discussion of entrepreneurship to economic development:

- "[V]oluntary acceptance of innovation is a major or true source of economic development" (p. 429);
- "The problem of economic development boils down to a search for property rights structures . . ." (p. 429);
- "This paper argues that *there can also be no economic development without private ownership*" (p. 431).

This last is a very strong proposition. Does Pejovich persuade us?

Partly this is a question of definitions. Clearly this is not the dominant way in which development is used in economics. A process that most economists would identify as economic development occurs when, in a poor, agrarian country, sufficient capital is found to extend the availability of best techniques to all producers, transforming an economy out of a vicious circle of low productivity, low income, low savings, low investment, high fertility, high population increase, and low per capita productivity and low income.

Pejovich assumes global frictionless capital markets, so that capital will flow effortlessly to any use where the marginal rate of return is higher for equivalent risk. Capital shortage, by assumption, cannot be a problem in Pejovich's framework. Therefore the only barrier to development is insufficient entrepreneurship due to insufficiently developed incentives in the system of property rights.

Is this a useful frame of analysis? This seems to fly in the face of much of the experience of developing countries, which suggests that capital shortage *is* a problem, perhaps the principal problem of development. But is it a problem only because of inept policies on the part of the developing countries which have tried to restrict the flows of capital?

The North-South literature (Burgstaller 1983) shows, within the framework of neoclassical general equilibrium modeling and classical assumptions about unlimited supplies of labor in the South, imported capital from the North can both relatively and absolutely

impoverish the South. Therefore a policy on the part of the South of restricting capital flows from the North and focusing on generating Southern capital could be beneficial to the local welfare of the South.

Further, theory shows that global factor mobility will maximize global welfare through equalizing marginal factor productivity. This, however, does not ensure that the groups initially having low capital endowments will be better off, although they could remain equally well off if the North bribed the South to accept free trade and capital flows. In the absence of bribery on the part of the North, to improve its position the South needs to increase its stocks of capital, through self-generated savings. The capacity to generate savings may not be independent of the system of property rights. The "prisoners' dilemma" may operate in the savings decisions. If there is an increase in the supply of capital, this will cause an upward shift in the marginal product of labor function. If the supply of labor remains the same, but the demand for labor increases as a result of the shift, the wage rate will rise. Thus a portion of the return to the increase in the supply of capital does not accrue to the suppliers of capital if they are different from the workers. The marginal private benefits to suppliers of capital are less than the marginal social benefit to society. If each individual supplier must make these decisions in isolation, too little capital will be supplied. If society is homogeneous in its time preferences, then a collective choice to supply capital would result in an optimal rate of capital formation. If society is not homogeneous in its time preferences, then we have no way of unambiguously ranking a collective choice representing the will of the majority over individual choices which give a better representation to the will of the minority, or of ranking them the other way around.

Local shortage of capital is a real phenomenon of development, not one to be ruled out of existence a priori by assumptions that what is good for the world as a whole must be beneficial to the South. If the shortage of capital is real, then useful discussion of economic development and property rights will give attention to the impact of property rights on increasing the local supply of capital, and not just to entrepreneurship.

The Difficult Case for Property Rights: Japan

Clearly, by any definition, Japan has experienced substantial successful innovation in the post–World War II period. More important, Japan's economic system defies any simple location of identifiable property rights for several reasons. First, the role of equity capital appears to be quite different in Japan. While there is private equity

capital, the debt/equity ratio may be the reverse of that in the United States, about 80/20 or 70/30. In addition much of the equity is held by other institutions, not individuals, in a series of interlocking ownerships and directorships. The suppliers of debt financing are in a more controlling position than the holders of equity capital. Further, equity capital turns over only rarely and there is no ongoing market on which to record the impact on the value of the assets of different managerial decisions. Second, a large portion of the savings is provided by individual citizens through the postal savings system and processed through the Japan Development Bank and the Fiscal Investment and Loan Plan, which have no equity ownership but which convert these funds into investment loans. And third, a major property right does exist in the form of job tenure and a reward system based on seniority and variable bonuses for the males who obtain employment in the major corporations. It is, however, nonmarketable and nontransferable.

According to the property rights analysis, Japan lacks classic capitalistic property rights and should therefore be deficient in entrepreneurship. This does not appear to be the case.

Capitalism Is the Best System for the Common Man

Pejovich claims that capitalism has produced a standard of living that no other system can match. However, when the argument is stated in this form, there is no way to separate the effect of an economic system from natural endowments and historical circumstances in determining the standard of living.

His point about the necessity of differentiating between growth rates of GNP and the well-being of the consumer is an important one. However, it is not immediately obvious how to make a comparison of the effects of economic system upon the well-being of the consumer. Table 1 shows that for many intervals, the annual rates of growth of per capita consumption in the USSR have exceeded those in the United States.

There are, of course, problems involved in meaningfully measuring consumption improvements for two societies when in one of them consumption is not composed of the items reflecting the preferences of consumers. In addition, other elements matter to the common man besides consumption. Security of employment, the level of the safety net, the opportunities for advancement, and individual freedom are all important. The question of which system performs better for the common man is therefore complex.

TABLE 1

ANNUAL GROWTH RATES OF CONSUMPTION PER CAPITA, INCLUDING COMMUNAL SERVICES

USSR		United States	
Years	Growth Rate[a]	Years	Growth Rate[a]
1928–1978	2.8	1869–1929	2.4
1928–1937	1.1	1929–1978	1.7
1950–1969	4.5	1950–1969	2.3
1970–1978	2.5	1970–1978	2.7

[a]In percent per annum.
SOURCE: Gregory and Stuart (1981, p. 360).

Pejovich's requirement of social validation of "choice sets" by the individuals involved means, however, that the only way we can know *what system of property rights is* preferred by the common man is by observing his voluntary choices. Given an opportunity to vote for the system they would prefer to live in, citizens could show us by their feet what their preferences are. Most likely many would prefer to take the risks, rewards, distributional system, freedoms, and ethical values associated with capitalism, while some would opt for the risks, rewards, and values of socialism. There is no way we can rank one community bundle as unequivocally superior in meeting the needs of the common man than another, as long as some citizens would voluntarily choose each.

Conclusion

The question at issue—the effect of property rights on the well-being of the common man—is a serious one. As Pejovich has shown in his discussion of Yugoslavia, the set of property rights is a continuum, so we need not and do not face an all-or-nothing choice.

The socialist economies of Eastern Europe have been hampered by *inadequate incentives* for entrepreneurship, *insufficient penalties* for poor choice, and the *absence of mechanisms* for social valuations of the choices of the leadership.

The real issues are: What costs do we pay in terms of entrepreneurship and social validation foregone and individual liberty lost for establishing a system with greater ethical appeal in terms of equality, full employment and security, and possibly macroeconomic stability (Kornai 1980)? If wealth were equally distributed, individuals could join together freely in workingmen's associations, as Proudhon suggested over a century ago. Then we could have the

benefits of maximally effective entrepreneurship, collaboration in the workplace, and social validation of resource allocation on the market. But even if we start out with equality, the consequences of a market mechanism under uncertainty is an income distribution that many find random, unjust, and unacceptable in its unregulated form. The issue is not whether entrepreneurial incentives and social validation are desirable, but what is the cost. If we really want to understand the merits of plan and market—the polar cases founded on different dispersions of property rights—it seems to me that these are the questions we need to address.

At the theoretical level we need to be aware of the dangers of allowing untested and unstated assumptions to enter and to invalidate our arguments about the relationship between property rights and performance. We must eschew reaching conclusions about social ranking not consistent with the framework of social validation. At the empirical level we need to identify more carefully the performance associated with different types of property rights and to examine in a more open-minded fashion the property rights associated with successful, nontraditional systems. Otherwise we can find as "answers" only the beliefs we started out with.

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