Allocation and Misallocation of Human Capital:
Some Lessons from Japan and Russia
by
Serguey Braguinsky

In October 1945 Masaru Ibuka and a couple of his friends rented a utility room in the war-devastated Tokyo that did not even have glasses in its window and started a radio repair shop. On May 7, 1946 a new company called "Tokyo Tsushin Kogyo" was born, with shareholders' capital of 190,000 yen (less than $1,000). The new firm had no capital equipment and whatever tools its employees used were hand-made by themselves. It was constantly running out of money to cover operating expenses.

In the same year of 1946 Pyotr Krasnov and a couple of his friends rented a utility room in the basement of an apartment building in Moscow and also opened a radio repair shop. They did procure some capital equipment and they had never run out of money because the demand for products and services produced by private "artels" (which is how those new businesses just allowed by the government to foster post-war recovery were called) was virtually insatiable.

50 years after, in 1996, the shareholders' capital of the company founded in Tokyo stood at 1,459,332,000,000 yen, or about $15 billion, with a comparable figure representing the market value of its plants, capital equipment and other capital assets. Its total market capitalization (number of shares issued, times the market price of a share) approached $30 billion, the company employed 151,000 people and had 998 subsidiaries world-wide, including the United States. Long before that, in 1957 the company also officially changed its name to SONY.

Things did not go quite as well for the company founded in Moscow. In 1949 Stalin decided that the recovery goals had been met and that he did not need to tolerate people earning money on their own businesses any more. The "artel" was closed and its members nearly escaped arrest and a trip to Siberia. Krasnov started drinking heavily and never again thought of putting his business energy to anything productive. In fact, since no records remained, I had to invent the name and the location, although the example is based on real historical developments.

In *The Mystery of Capital*, Professor De Soto forcefully makes the point that capitalism is not working outside the West (which presumably includes also the Far East) because of its failure to transform real assets into capital. No doubt, this is a valid and very important point. The two examples above, as well as many others, however, suggest that another extremely important aspect of the problem is related to the transformation of human assets into human capital.

Let me continue with the Soviet example. After the collapse of communism, Russia inherited quite respectable level of human capital (assets) from the former Soviet Union. In 1994 the fraction of population in the age group of 25-64 with at least higher education stood at 17.2%, more than 3 percentage points higher than the average for 28 OECD countries cited in Professor Ehrlich's talk. Comparing this figure with the data in his table T-2, we can actually see that Russia was behind only the United States, the Netherlands, Norway, Canada and Japan. Although the United States clearly stands out, the Soviet educational achievements and especially its higher educational achievements after the death of Stalin had been quite impressive. And if there are some lingering doubts that it might have been only a small elite that got excellent education while the rest of the population was deprived of it (as it was under the Czars), let me point out that the literacy rate in Russia is higher than in the United States and that the fraction of the population in the age of 25-34 who had attained at least upper secondary education was 93.5%, the highest among all countries, when comparing this to Table T.3 in Professor Ehrlich's presentation.

Despite this presence of human capital, capitalism in Russia is clearly not working and in particular innovation-led endogenous growth could not be a more distant goal. In fact, ever since the country opened up its borders, Russia has been losing its human capital to emigration at the rate of hundreds of thousands of people per year, as reported by the Russian press. Moscow State University, the flagship of Soviet and Russian higher education is reported to have lost over 20% of its best scholars. And those who stay behind often have to find occupation that is at best very remotely related to the best employment of their human assets. For example, trained engineers might be selling home-grown potatoes in a farmer's market.

There is no doubt that the accumulation of human capital is an extremely important necessary condition for endogenous growth, and Professor Ehrlich in his talk at this conference clearly documents that the big attention given by the United States especially to higher education paved the way for the accumulation of the type of human capital that was especially important in securing such growth. What the Russian example indicates, however, that we need to analyze human capital as an engine for endogenous growth in a general equilibrium setting, encompassing both the supply side and the derived demand.

Supply decisions (investment in human capital by families and individuals) depends on the expected return, but this return will be sharply different depending on the economic system and the political regime. The return can also come from different sources of derived demand, again depending very much on the economic system and the political regime. In particular, regimes can reward either productive or unproductive (or even destructive) usage of human capital (Baumol, 1989).[1] For example, the former Soviet Union with its universally free educational system (including higher and post-graduate education) was able to generate considerable supply of human capital, as mentioned above. The system of hierarchical promotion, however, produced the derived demand that was oriented toward acquiring primarily political capital and rent-seeking. Productive human capital could very often end up with a death penalty or a trip to Siberia as a "reward" for implementing an unsanctioned innovation. This rules out any kind of innovative entrepreneurship under totalitarian regimes like that of the Soviet Union.[2]

Building such a general equilibrium model of human capital and linking it to the big question of economic development and the distribution of wealth remains a task for future research, the blueprint for which was outlined earlier at this conference by Professor Ehrlich. Here I would like to look in some detail into one relatively neglected issue that perhaps belongs to the organization of the derived demand side.

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[1] Murphy, Shleifer and Vishny (1991) have a model in which different rates of return to productive versus rent-seeking activity cause some countries to grow faster and other countries to grow slower or even not at all. Ehrlich and Lui (1999) present a model in which human assets can be used to invest in creating productive or political human capital. They obtain the result that in some cases the rates of growth may be similar but the countries where political capital is more important will still have lower level of welfare.

[2] Braguinsky and Yavlinsky, (2000, Ch. 2) formally model the game between the totalitarian dictator and an innovator.

It is widely believed that common forms of ownership of human capital (namely, the prohibition of slavery) make it impossible to pledge it as collateral for borrowing. Hence, the emphasis in the literature (including Professor De Soto's book) on the importance of capital markets by which borrowing and lending on some tangible collateral is meant. But at least in one important case, that of Japan, we have an example of an organization of production that does allow the direct employment of human capital as collateral for financing innovations. Of course, this mechanism is not slavery. It is uses reputation and trust (two extremely important forms of human capital) as collateral and it exploits the complementarity between human capital and non-human wealth.

Let us look once again at the success story of SONY. It is true that the engine of its success was the human capital of its founding engineers. When the firm was founded in 1946, however, Ibuka (the engineer who actually ran the firm) asked Maeda, his father-in-law and prominent intellectual, former Minister of Education in the first post-war government to assume the post of the president. Maeda did no more and no less than to throw his reputation and his contacts behind the firm but, arguably, it was the combination of his reputation and the human capital of the engineers that allowed the firm to start operating. Moreover, it was Maeda and other prominent members of the board of directors drafted by him who introduced SONY's management to several wealthy families with assets to invest. Those families were persuaded to subscribe to new issues of SONY's shares which enabled the firm around 1950 to embark on its first truly big project, the production of the first Japanese-made tape recorder. Representatives of those wealthy families became very closely involved in day-to-day operations of the firm, helping it to find more clients to buy tape-recorders.

SONY is just one example. My research in the relatively less known early stage of the Japanese industrialization in the late 19th century shows basically the same picture. Contrary to a perception still pervading much of development finance literature (and somewhat echoed also in Professor De Soto's book), first modern Japanese manufacturing firms did not borrow money from financial intermediaries on the collateral of real estate or some other tangible assets. Instead, they relied on the same kind of reputational and trust capital as did SONY in the late 1940s. Wealthy people with high reputation in the business community purchased shares issued by firms whose engineers

they personally knew and trusted and, using their reputations and monitoring ability as collateral, also got loans from banks to buy even more shares.[3]

Whenever personal reputation and trust are used as collateral for bringing in resources needed to implement an innovation, the ability to be personally involved and familiar with the enterprise becomes absolutely essential. The link between distribution of ownership and firm control first noted by Harold Demsetz (1988, Chapter 14) assumes special importance in this context.

Demsetz argues that when large scale is efficient, a certain but by no means too high degree of wealth inequality is needed to ensure effective control. If the distribution of wealth is completely equal so that nobody owns large chunks of wealth, ownership over a large firm has to be dispersed among many small investors and efficient control become impossible. If, on the other hand, the distribution of wealth is too concentrated, with only a few people owning the bulk of the economy's wealth, a single owner will have to spread his control effort across too many firms with a similar loss of efficiency. Moderate concentration of wealth is thus needed so that owners can own substantial stakes in individual firms but not in too many of those.

Although Demsetz sets up his argument in the framework of owner-controlled firm, I think that his reasoning can be readily extended to the mechanism of resource reallocation to innovative entrepreneurial activity. If reputation and trust are indeed the principal collateral, lenders have to be directly involved with the entrepreneurs they are lending to and must be able to monitor directly how the resources are being used. This implies that the number of lenders and the number of potential innovators should be roughly of the same order of magnitude. If there are no deep pockets, the task of allocating resources to innovators becomes formidable, at least without well-functioning capital markets, something that cannot be expected in an economy just about to start moving toward capitalism, as Demsetz also points out. But if there are only a few deep pockets will huge amassed wealth, most potential innovations would go unrealized as

[3] Although an example of one country cannot be conclusive, I would suggest that the whole "delegated monitoring" theory of banking (Diamond, 1984) may merit a closer look. In the early stages of industrialization in Japan, at least, it was banks who delegated monitoring of loans to individuals with reputation, not the other way round.

there are obvious limits to the span of control by any individual lender. This is what has been happening in the Soviet Union after the collapse of communism as basically the whole financial sector of the economy fell under the control of just a few clans, called "oligarchs" while the rest of the population was deprived of any substantial wealth.

The right amount of supply of reputational and monitoring capacity and the presence of a link between those and ownership of tangible wealth thus do seem to play an important role in making the derived demand side for human capital work in the direction needed for the success of capitalism in Japan in the late 19th century and then again after World War II. It remains a task for future research to see if the same kind of link worked in other successful capitalist countries. The bottom line is that, clearly, mechanisms linking the supply of human capital to the right kind of incentives and thus allowing it (and complementary tangible assets) to be employed in a productive fashion through derived demand are diverse and manifold.

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