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TRANSITION AND THE "SPECIATION" OF THE JAPANESE MODEL

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Introduction.

After the end of second world war, Japan was considered to be a "transition economy". The American occupying forces regarded it as a country coming from a feudal-*zaibatsu* past on top of which a centralised command economy had been developed during the war. The *zaibatsu* economic system had to be buried for ever because, according to the Americans, it was the ultimate cause of the militaristic characteristics that had been shown by the Japanese society[1]. The expropriation of the *zaibatsu* families involved that for a while Japan became a "quasi-nationalised economy"; for this reason, the privatisation of the ex-*zaibatsu* firms was bound to involve problems that are now very familiar in the ex-socialist transition economies.

The aim of the transition was to make Japan a standard capitalist country. However, Japan there was not going to make a transition to an "American-style" economy. Instead, the Japanese economy saw the "speciation" of a new economic model that, after few years, many American firms tried to imitate.

The post-war experience of Japan can be instructive to understand what is happening in Central and Eastern Europe. While the change has often been viewed as the transition to a (unique) model of a market economy, each country is, in fact, producing its own species of capitalism. Of course, the success of the Japanese "speciation" says nothing about the success of the new species that are emerging. Indeed, an analogy with natural selection would suggest that the emergence of successful species comes together with many other unsuccessful mutations. However, the experience of Japan shows that one should not take as given the species of capitalism that can survive and prosper in the world economy. One should not "a priori" assume that the new species, emerging after socialism, should necessarily be inferior "transitional" arrangements to some unspecified form of "pure" capitalism.

A puzzling aspect of the emergence of the Japanese model is that the "new organisational species" did not come about in a country such as the U. S. where market competition was vigorous but rather in a relatively backward country at the periphery of the world economy. This seems to cast serious doubts on the idea that competition tends always to select the best organisational outcomes. While major institutional shocks may often produce very inefficient organisational arrangements, they would seem sometimes even necessary to stimulate the emergence of efficient organisational arrangements that would have not have been selected by a competitive market process.

[1] According to Morikawa (1992) this is not correct: the zaibatsu companies were not involved to the raise of militarism in Japan and were opposed the war with the United States.

In this paper we try to explore these complex issues by applying the concept of "organisational equilibria"[2] to a comparative historical analysis of the "Japanese model".

We start by considering two "idealised" models: a "Tayloristic-Fordist" or "American model"(A-model) and a "Toyotist" or "Japanese model" (J-model) of production. The two models should be taken as "thought-experiments": their schematic simplicity is intended to help us to focus on the nature of the interaction between rights and technology.

In the second section we consider the A-model and the J-model in the framework of New Institutional and Radical Theory views . We will show that in the two theories causation runs in opposite directions. According to standard New Institutional Theory some "technological" features of the resources (such as their monitoring and specificity characteristics) determine the structure of rights that characterises the firm. According to standard "Radical Theory" the opposite is true: the structure of rights determines these "technological" characteristics.

In the third section we consider the concepts of organisational equilibria and institutional stability. We show that these concepts can integrate the Radical and New Institutional directions of causation. Joining together the two streams of the literature implies that property rights can "re-generate" themselves via technology and technology can "re-generate" itself via property rights. When this happens, we can say that we are in a situation of organisational equilibrium. We show that multiple organisational equilibria can exist. The A-model and the J-model can be considered as self-sustaining "organisational equilibria". These equilibria are "institutionally stable" in the sense that they are resilient to "weak" shocks to the technology or the property right system. Organisational equilibria imply that history matters: initial institutional and technological conditions can reproduce themselves and "strong" shocks, upsetting the "institutional stability" of the system, can bring about new "organisational equilibria".

In the third section, in the framework of a very simple model, we consider the interaction between property rights and technology. The "Institutional Assumption" is expressed by observing that "high-agency-cost factors" tend to acquire the control of the organisations. The "Radical Assumption" involves that owning factors tend to become "high-agency-cost" factors creating the conditions for the positive feedback that characterises organisational equilibria. Also the "Radical Assumption" can be easily captured by the language of standard economic theory. Owning factors pay for the agency costs of employing other factors whereas they save on their own agency costs: thus, ownership changes the relative prices of using the factors and induces a process of substitution: the non-owning high-agency-cost factors tend to be replaced by the owning

[2] See Pagano (1991 a), (1991 b), (1992 b), (1993) and Pagano & Rowthorn (1994) and (1996). A brief and preliminary application of the "organisational equilibria" framework to the analysis of the Japanese model was contained in Pagano (1994).

high-agency-cost factors and the "speciation" of new ownership relationships is inhibited by this preventive substitution of alternative (possibly more efficient) owners.

The "anti-speciation" mechanism that is built in each organisational equilibrium cannot be easily overturn by the forces of competitive selection. In section five we argue that the forces of competition tend to select the best members of a given species of organisation but tend to inhibit the formation of a new species even when this is more efficient. In organisations as well as in natural species each characteristic tends to become optimal given the other characteristics. For instance, the A-model can be described as an organisational equilibrium where the property rights are optimal given the technology and vice versa. In a competitive environment a change in property rights results (at least in the short run) in an inferior hybrid that is very likely to be wiped away by competition before it is able to develop the other complementary mutations. This may explain why the speciation of the new organisational model occurred in a protected periphery like post-war Japan or, to use a biological terminology, it had an "allopatric" nature.

In the sixth section, we try to apply this framework to the study real-life Japanese history. We concentrate our attention on the strong "institutional" shocks that have made Japanese history so different from that of the other capitalist countries and we will focus on the fundamental steps that after the war allowed Japan to develop the financial and labour market institutions that made it possible a different self-reinforcing interaction between property rights and technology. .

Finally, in the seventh section, we consider some implications of our analysis for the "institutional diversity" that is emerging in ex-socialist economies.

1. Two "ideal types": the A-model and the J-model.

Both models will be described on the basis of two sets of data; the first concerns the technological characteristics of the resources that are employed in the firm whereas the second concerns the rights that the individuals have on these resources and on the firm where they are employed.

Let us start with the technological characteristics:

In the case of the Tayloristic-Fordist or American model (A-model) the resources that are employed within the firm have the following characteristics:

A very detailed division of labour is employed without any form of job-rotation; labour acquires little job-specific or firm-specific skills. Workers are given precise and relatively simple commands which do not require the co-operation of their fellow-

workers; in this way, the contribution of each worker can be easily assessed. Thus, in the A-model labour is a "generic" and "easy to monitor" factor.

In the traditional Fordist A-model capital tends to have characteristics that are opposite to those of labour. Machines are often firm-specific; they are often built to satisfy the needs of a particular product that is produced by the firm and can find little use outside it. At the same time machines are "difficult to monitor" in the sense that it is difficult to assess their user-induced depreciation by observing their conditions before and after their employment. Their user-induced depreciation can only be indirectly assessed by observing how the machines are used by the workers. In this sense, in the A-model, capital is a specific and "difficult to monitor" factor.

The characteristics of the factors employed in the J-model[3] firm seem to have characteristics very different and sometimes opposite to those employed in the A-model firm:

As to labour, much firm-specific investment in human capital is carried out: workers are encouraged to understand the technological problems of the firm and to suggest solutions for these problems. Job rotation and team-work are also encouraged; this requires human capital investments specific to the human capital of other individuals. The complexity of jobs and the existence of team-work implies that the productivity of an individual worker is difficult to assess for outside observers. In this sense, in the J-model, the workers acquire firm-specific and "difficult to monitor" skills.

It is not clear whether the machinery adopted in the J-firm is substantially different from that adopted in the A-firm. However, another characteristic of the J-model seems to be the massive adoption of multi-purpose programmable machinery. Machines are less specific to a particular purpose. They have also some "self-monitoring" characteristics that may make user-induced depreciation easy to assess.

Thus, the two firms are characterised by a tendency to adopt different technologies: the J-firm employs more specific and difficult-to-monitor labour (relatively to specific and difficult-to-monitor capital) than the A-firm.

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[3] A similar characterisation of the Japanese and American firms can be found in Aoki (1987a) and (1988). Aoki (1993) clarifies how the Japanese firm is substantially different from a workers' co-operative and explains the role that external agents, such as financial institutions, in the solution of "free-riding" problems. Aoki (1987b) explains the "complementarity" between labour-market and financial institutions. Finally, Aoki (1992) introduces the "duality principle". According to this principle, under fairly general conditions, informational decentralisation should be coupled with the centralisation of the ranking, which defines the hierarchy of the firm, whereas the centralisation of the information should be associated with the decentralisation of ranking. Aoki (1992) identifies the Japanese model with the first case and the American model with the second. Aoki's view of the two models is not inconsistent with that advanced here. The decentralisation of information, which characterises the Japanese firm, is related to the existence of difficult-to-monitor and specific labour which embodies this information; the centralisation of ranking is equivalent to the complex system of rights which we claim to safeguard the Japanese worker independently of its present allocation within the firm. A similar "equivalence" holds for the case of the A-model.

The two firms are also characterised by a different set of rights and, in particular by a different set of (legal or customary) set of job rights:

In the A-firm the workers do not feel and, in many respects, they are not members of the organisation: the firm "belongs" to the owners of capital who have hiring and firing rights. The workers have "weak" job-rights on the organisation.

In the J-firm the workers feel part of the organisation : job-rights are much stronger and many workers can expect that they will spend all their working life in the same organisation. Capitalists do not "own" the organisation in the sense that they have hiring and firing rights[4].

Assume that our schematic description of the A-model and of the J-model is correct. Then the following questions arise: is there a relation between the technology and the rights that characterise these two "ideal" firms? Can the technology used by each firm explain the set of rights? Or, can the rights that characterise each firm explain the nature of the resources that are employed?

2. Two opposite views for two opposite models.

In order to answer these questions we will briefly consider two theories that in the recent years have emerged as alternatives to traditional neoclassical doctrine : New Institutional and Radical theories.

In traditional neo-classical theory, under the assumptions of well defined property rights and perfect competition, it can be shown that it does not matter who hires whom (Samuelson, 1957): the allocation of rights cannot influence or be influenced by the characteristics of resources that are adopted. In neo-classical theory it is implicitly assumed that resources are "general-purpose" (i. e. they can be moved at zero cost from one use to some other alternative use) and they are "easy to monitor" (so that problems due to asymmetric information do not arise).

New Institutional theory[5] has shown how, when these restrictive assumptions are relaxed, the monitoring and specificity characteristics of resources can influence the

[4] On this point see Iwata (1992) which also contains an interesting account of the historical origins of the system.

[5] The New Institutionalist school stems from Coase (1937) and (1960). It includes the contributions of Alchian (1984) and (1987), Alchian and Demsetz (1972a) and (1972b), Jensen and Meckling (1976), Demsetz (1966), North (1973) and (1981), and Williamson (1985). They see the firm and the property rights structure of the firm as an efficient answer to the cost of using the market mechanism. From this point of view also Grossman and Hart (1986) and Hart and Moore (1990) belong to this school. Useful

relative efficiency of different systems of rights. The firm is conceived as a governance structure; it can improve on market type organisation when the enforcement of simple market contracts becomes costly or impossible, because of the existence of specific or "difficult-to -monitor" resources.

At the same time, the rights in or the control of the firm should be acquired by the owners of firm-specific or difficult to monitor resources. The owners of general purpose or "easy to monitor" resources should have no rights in the organisation. If the former instead of the latter own the organisation monitoring or insurance expenses can be decreased and the value of the organisation can be increased.

According to the New Institutional view, firms are there to mitigate asset-specificity and monitoring problems. For this reason, they are going to be owned by relatively more firm-specific and difficult to monitor factors. These factors can solve more efficiently the problems which are the cause of the very existence of the firm.

Consider the case of the owners of firm-specific assets. The value of their resources will increase or decrease with the success or the failure of the firm, will change with the policies of the firm and will be lost if they are fired from the organisation. These circumstances do not hold for the owners of the general purpose resources. Thus, the owners of specific resources will be willing to offer a higher price for the control of the firm. Their control will save on the high insurance costs which should be otherwise be paid to induce firm-specific investments.

Consider now the case of the owners of the difficult to monitor resources. If they own the firm, they will have an incentive to perform efficiently and the high cost of measuring their contribution can be saved. Such saving will obviously be much less if the owners of the easy to monitor resources own the organisation. Thus, if the owners of the difficult to monitor resources own the organisation, they can run it more efficiently.

Thus, according to New Institutional theory, rights and safeguards will be given to the owners of "difficult-to-monitor" and specific resources. In particular, in the case of the A-model and of the J-model, the structure of the rights and safeguards can be explained by referring to the different types of resources employed by the two organisations.

In the A-firm (difficult-to-monitor and specific) capital controls the organisation because it would be inefficient to give the rights of control to "easy-to-monitor" workers who have made no investment in firm-specific skills.

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readers are Putterman (1986) which includes also "radical" contributions) and Langlois (1986. Pagano (1992a) considers the relation between the modern transaction cost approach and earlier approaches based on the disequilibrium costs of the market mechanism. The New Institutional approach is bound to change the structure of microeconomic theory: the firm must be seen as a "market-like institution" and not simply as a "consumer-like" agent. On this point see the last chapter of Kreps (1990) and the approach developed by Milgrom and Roberts (1992) in their textbook "Economics, Organisation and Management".

By contrast, it is efficient that workers have job-rights and safeguards in the J-firm. Here, the workers make specific investments in human capital which would be very risky and, therefore, expensive in the absence of safeguards and rights on the organisation. Moreover, given that the workers are relatively difficult to monitor, monitoring costs can be substantially decreased when the workers feel part the organisation.

Thus, in New Institutional theory, the direction of causality runs from the technological characteristics of the resources employed in the organisation to the structure of rights. This direction of causality can be inverted on the basis of the arguments provided by Radical economists.

Radical economists have emphasised that "easy to monitor" and "generic" labour are not the neutral consequences of the dictates of technological efficiency but are the outcome of capitalist property rights.

We will not examine in detail the arguments of the Radical economists; we will only consider the possibility that the arguments suggested by New Institutional economists themselves can be inverted following the direction of causality suggested by the Radical economists.

In New Institutional literature the firm exists because of the costs of the market mechanism. At the same time, the efficiency of firms relies on the fact that the property rights on these organisations can be exchanged and acquired by the individuals who can rule them more efficiently. However, if market transaction costs exist, these gains may be lower than the costs of exchanging property rights. Moreover, exchange may take time. Because of the costs and the time taken by the transactions, changes in technology may have a weak or slow effect on the re-allocation of property rights. And, if property rights are not immediately exchanged according to the dictates of technological efficiency, the opposite effect may take place. Property rights may influence the technology used by the firm and, in particular, the degree of specificity and the monitoring characteristics of the resources used by these organisations.

The influence of property rights on technology also has to be examined for a more fundamental reason. Technology is not created and adopted in a property rights and institutional vacuum. The technology adopted by the firm may well determine that some property rights have to be changed following the efficiency drive examined by New Institutional Economics. But, in turn, this technology is always "produced" and shaped within the framework of a certain ownership structure which influences the nature of the technology[6].

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[6] Alternative property rights structures can generate different "technological trajectories". On "technological trajectories" see Nelson and Winter (1977) and Dosi (1988).

For all these reasons, the influence of property rights on the technological characteristics of the resources deserves as much attention as the opposite line of inquiry.

Let us now consider more in detail how the specificity and the monitoring characteristics of the resources can be influenced by any given initial assignment of property rights. For example, consider the case of the A-model that is characterised by "strong" capitalist rights and such a technology that, unlike machines, the workers are "easy to monitor" and "generic" factors.

We have seen that in New Institutional economics this situation may be explained on efficiency grounds. Workers have no rights in the firms where they work because they are "easy to monitor" and/or "general purpose" factors. Resources can be saved by having specific and difficult to monitor capitalists owning the firm.

However it is perfectly legitimate to explain the same situation inverting the direction of causation and by pointing out that, unlike machines, the workers may have become "easy to monitor" and "general purpose" factors because they have no rights in the firm where they work[7].

Under capitalism the development of difficult to monitor human resources may be inhibited by the fact that the workers have no rights on the organisations where they work. The high costs of monitoring labour will imply that capitalist technology will be biased against "difficult to monitor labour". By contrast, no similar bias exists against "difficult to monitor capital[8]" because the owners of the organisation, owning the capital employed, have no incentive to misuse it. Thus "classical" capitalism may be characterised by under investment in "difficult to monitor" labour.

Similarly, the development of firm-specific workers' skills, as well as the development of assets specific to the preferences of the present workers, may be inhibited by the fact that under classical capitalism the rights to these assets are ill-defined. These assets belong neither to the employers (who can lose them if the workers quit) nor to the workers (who can lose them if they are fired from firm). Under capitalism no similar problem exists regarding the case of firm-specific machines.

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[7] For instance, capitalist property rights may cause such a detailed division of labour (along the lines suggested by Babbage (1832) and Taylor) that the workers perform simple tasks which are easy to control and require only general purpose or "generic" skills. On this point see Pagano (1991a) and (1992c) where it is argued that" classical capitalism" (such as that considered by Braverman, 1974) can inhibit the development of both "general" and "firm-specific" human skills and may be only be consistent with the use of "generic" skills. These papers consider also the consequences of alternative kinds of capitalism on the development of the skills of the workers. Important criticisms of Braverman include Edwards (1979) and Littler (1982). Thompson (1983) and Pagano (1992c) survey this literature.

[8] The idea of "difficult to monitor capital" is not immediately clear but Alchian and Demsetz (1972a) show that it makes sense. Capital is "difficult to monitor" when we cannot infer user induced depreciation by observing capital before and after its employment. Some costly information on the way in which capital has been used is necessary to estimate user-induced depreciation.

Thus, the property rights of "classical capitalism" imply under investment in difficult to monitor *and* firm-specific labour. In principle, the argument that the easy to monitor and "general-purpose" workers (coupled with specific and difficult to monitor capital) are the cause for the existence of capitalist property rights is as good as the argument that the latter are the cause of the former.

The "inverted" argument which we have considered is quite general. Whichever factor happens to own the organisation will have fewer inhibitions than the other factors to become "difficult to monitor" and specific to the organisation. For instance, if the workers own the organisation there will be a tendency to under-invest in firm-specific and difficult to control capital. Difficult to control and specific capital is more likely to be developed under capitalist rights[9] and difficult to monitor and specific human capital is more likely to be developed when the workers have some rights in the firm.

Thus, following the radical argument, the New Institutional explanations of the A-firm and of the J-firm could be inverted: the system of rights that characterises each one of these model shapes the technological characteristics employed in these organisations. The J-firm, providing safeguards and job rights for the workers, makes it cheaper the development of firm-specific human capital and the use of difficult-to-monitor labour. The A-firm inhibits the use of human capital because it does not provide an adequate structure of rights and safeguards for the workers.

3. The A-model and the J-model as organisational equilibria.

The New Institutional argument can schematised by saying that the *technological* characteristics of the resources *T* determine the structure of *rights P* or:

T ------> *P*

In Radical theory the argument is put upside down or:

P ------> *T*.

[9] It could be argued that the workers are not at disadvantage when they rent "specific" capital because instead of renting machines, they can borrow money, buy the machines and use them as collateral. However, firm-specific machines are less valuable as collateral than general purpose machines because it is more difficult to liquidate them in case of bankruptcy. In both cases it will be more expensive to rent firm-specific capital than general purpose capital. For similar reasons, difficult to monitor capital, like firm-specific capital, is less valuable as collateral than easy to monitor capital. In this case it will be more expensive for the lender to monitor user induced depreciation. Thus, also in this case borrowing money and buying machines may not be a solution to the problem of difficult to monitor capital.

So the Radical and New Institutional theories have opposite direction of causation. However their arguments are not incompatible. By contrast, in my opinion, the relationship between rights and technology can be properly understood only if the Radical and New institutional arguments are somewhat integrated in a single framework.
The fact that (*T*) causes (*P*)and (*P*) causes (*T*) are not mutually incompatible; rather, they imply that (*T*) can reinforce itself via (*P)* and (*P)* can reinforce itself via (*T*). When this occurs, the New Institutional and Radical mechanisms taken together imply that institutions of production such as the A-firm or the J-firm are self-sustaining. In this case we can say that we are in a situation of "organisational equilibrium"[10].

A situation of organisational equilibrium can be schematised as follows:

------> *T* ------> *P* ------> *T* ------> *P* ------> (F1)

In other words, in an organisational equilibrium the property rights reproduce themselves via technology[11] and the technology reproduces itself via property rights.

According to the way in which we assume that the initial conditions of the system were given, an "organisational equilibrium" can be interpreted as a "property right equilibrium" or as a "technological equilibrium".

If we assume that the initial conditions of the system were given in terms of a "strong" property rights shock, then an organisational equilibrium can be interpreted as a "property right equilibrium" where the initial property right shock has reproduced itself via technology..

By contrast, assume that a technological innovation or a change in the structure of demand has changed the technological characteristics of the resources to be employed. In this case the initial conditions have occurred in terms of a strong technological shock and an organisational equilibrium can be interpreted as a technological equilibrium where the initial technological shock has reproduced itself via property rights..

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[10] An "organisational equilibrium" can also be interpreted as a "Nash equilibrium." Organisational equilibria may be defined by the fact that "producers" choose that technology that maximises profits given the existing property rights system and by the fact that "financiers" arrange transactions that maximise ownership rent given the existing technology. Thus, the idea of organisational equilibrium is based on the assumption that "financiers" have perfect knowledge of the value of the company for alternative owners using the existing technology but they are ignorant of the value of the company under alternative technologies. This "informational constraint" can be due to the fact that technology is not a "menu" that is available for free to everybody but has to be created, developed and transmitted at certain costs in a given institutional framework characterised by certain property rights. When certain property rights are missing, much of the knowledge about the associated "optimal" technology is also likely to be missing. On this point see Pagano & Rowthorn (1996).

[11] Putterman (1982) and Levine (1993) consider alternative mechanisms by which property rights may reproduce themselves.

In many cases, after some time, it may be hard "to know" whether an "organisational equilibrium" is a "property rights equilibrium" or a "technological equilibrium"[12]. Indeed, after the initial shocks no distinction between them is possible .

In this respect, independently of their historical origins (which may be different in different countries) the "A-firm" and the J-firm define "organisational equilibria".

In the case of the A-model the exclusive rights of management and capital on the organisation induce a "Tayloristic" technology (difficult-to-monitor or specific capital and easy-to-monitor general purpose labour) that can only be cheaply operated under "strong" managerial rights and capital ownership; or, alternatively, the "Tayloristic" technological specification of resources induces capitalist and managerial exclusive control under which it is optimal to choose a Tayloristic technology.

By contrast, in the case of the of the of the J-model, the existence of rights of the workers on the organisation induce a "Toyotist" technology (more intensive use of difficult to monitor and specific labour) that can only be cheaply operated when workers are given some rights on the organisation; or, alternatively, the "Toyotist" technological specification of resources requires rights and safeguards for the workers under which it is optimal to choose a "Toyotist" technology.

If we consider the A-model and the J-model as organisational equilibria, the self-sustaining character of these institutions becomes very clear. This self-sustaining characteristics imply that, under certain conditions[13] multiple organisational equilibria can exist. They also imply that each organisational equilibrium can be "institutionally stable" in the sense that it is resistant to "weak" shocks on the rights or the technology. Organisational equilibria imply that history matters in the sense that "strong" institutional or technological shocks can bring about different self-sustaining equilibria between rights

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[12]The concept of "organisational equilibrium" is related to the Marxian notion of "mode of production" which is also based on a close interaction between property rights (relations of production) and technology (productive forces). However, this relation may only hold subject to two qualifications.

Firstly, our analysis is related to what Hirschman (1981, p. 89) has aptly defined as "micro-Marxism". Hirschman observes that Marx "oscillated between the grand generalisation with which to characterise an entire epoch or process and the discriminating analysis of events which made differences between countries and subperiods stand out in richly textured detail". Our analysis is clearly related to the second approach. For example, we define as alternative "organisational equilibria", or modes of production, Fordist-type firms and Japanese-type firms.

Secondly, Marxist analysis has often oscillated between "technological determinism" (technology invariably gives rise to a unique set of property rights) and "property rights romanticism" (alternative property rights can invariably bring about an alternative technology). We hope that the idea of organisational equilibrium can clarify and overcome the limitations of these two extreme views.

Chapter 3 of Pagano (1985) advances the hypothesis that the two Marxian views of history are related to the contradictions between two models of socialism that are implicitly contained in his theory. However, in spite of these contradictions, the Marxian theory is an important ingredient to develop a theory of history. We agree with John Hicks (1969 p. 3) who maintains that, besides the Marxian theory of history, "there is so little in the way of an alternative vision which is available".

[13] These conditions are derived in Pagano (1993) and Pagano & Rowthorn (1996).

and technology and cause a qualitatively different path of institutional and technological interactions.

4. Organisational equilibria: a simple model.

(F1) describes an organisational equilibrium[14] where technology and rights reinforce each other. In this section we will consider a (very simplified) formalisation of this concept and we will try to clarify the role of the distribution of assets on the selection of a particular organisational equilibrium.

We have already observed that according to the Radical literature, owning factors have a greater tendency to become specific and/ or difficult factors or, in other words, high-agency-cost factors. This is due to the fact that an owning factors has no "inhibitions" to become firm-specific nor to develop situations of asymmetric information under which it becomes a difficult-to-monitor factor. The incentives due to ownership allow a saving of these agency costs.

In some ways, changes in property rights have an effect similar to changes in relative prices. They increase the agency costs of using the non-owning factors relatively to those of the owning factors. Thus, similarly to changes in relative prices, changes in property rights have a substitution effect: the high-agency-cost resources of the non-owning factors tend to substituted away; for this reason non-owning factors tend to become low-agency-cost factors. Or, in other words, they tend to become less firm-specific and more difficult-to-monitor than owning factors.

Thus the changes in the technological characteristics of the resources can be explained by a familiar mechanism of standard economic theory. A change in property rights induces a process of technological substitution that tends to make non-owning agents low-agency-cost resource.

The core of the "Radical" approach can be captured by the assumption that different agents face different costs when they own and run the organisation and are, therefore, choose different technologies).This assumption can be formalised in a very simple way that clarifies why changes in property rights induce a process of technological substitution.

In order to simplify the analysis we assume that there are only two types of agents capitalists and workers that can own the organisation and four types of factors: low-agency-cost and high-agency-cost capital and labour.

We assume the existence of a standard production function Q (k, K, l, L) such that the output Q can be produced with different combinations of low-agency-cost capital and labour (k ,l) and high-agency-cost capital and labour (K,L). However, following David

[14] For a more detailed analysis of the properties of "Organisational Equilibria", see Pagano (1991, 1992 and 1993a) and Pagano and Rowthorn (1996).

(1975), we assume that, in the short run, the agents know only the combinations of factors that they are actually using and that exploring new technologies may require time and effort. Thus, Q (.) can be interpreted as a "long-run" production function. Thus, the substitution effects induced by property rights are not immediate and it is possible to have short run mismatches between property rights and the associated technology.

We assume that when workers own the organisation they pay an additional agency cost Z in order to employ a unit of difficult-to-monitor or specific capital K - a cost that is saved when K is employed under capitalist ownership[15]. By contrast, when the capitalists own the organisation, they pay an additional agency cost H when they employ a unit of difficult-to-monitor or specific labour L - a cost that is saved when L is employed under labour ownership. No such additional costs are paid for easy-to-monitor and general purpose labour and capital *k* and *l* when they are employed by either capitalists or workers[16].

We denote by *r* and *w* the prices of respectively easy-to-monitor and/or general capital and labour and by R and L the prices (net of agency costs) of respectively difficult-to-monitor and/or specific capital and labour. We also set the price of output equal to 1. Thus, we can formulate our "Radical" assumption as follows:

Radical Assumption:

Under capitalist ownership firms maximise profits equal to:

$$R^C = Q(k, K, l, L) - [rk + RK + wl + (H+W)L] \quad (1)$$

Under labour ownership firms maximise profits equal to:

$$R^L = Q(k, K, l, L) - [rk + (Z+R)K + wl + WL] \quad (2)$$

This way of formalising the "radical assumption" makes it very clear why property rights influence technology in a way similar to changes in relative prices: for instance, the relative prices of the high-agency-cost factors are (H+W)/R under capitalist ownership

[15] These additional agency costs will not only be paid when the workers rent high-agency-cost capital but also under alternative contractual arrangements where the workers borrow monetary capital and use high-agency-cost capital as collateral. On this point refer to footnote N. 9.

[16] We concentrate our attention on a model with only two types of capital and labour. Likewise we consider only the extreme cases of "pure capitalist" and "pure labour" ownership. This is done for analytical simplicity. Observe that the symbols could stand for different factors: this allows alternative interpretations of the model that could be used to study the outsider-insider problem in labour marker or the relation between financial and industrial capital.
More complex cases, involving the "unbundling of ownership rights" and their redistributions characterise real life economies. For instance the Japanese economy can be seen as a case in which hiring and firing rights have been unbundled from traditional share holder ownership rights and re-distributed to the people using capital.

and W/(Z+R) under workers' ownership. Thus, under standard assumptions, the intensity of high-agency-cost capital relatively to the intensity of high-agency-cost labour is higher under capitalist ownership than under labour ownership. Observe that in this framework, the value of the elasticity of substitution among factors becomes a measure of the "strength" of the effects of changes of property rights on the nature of the technology.

We have seen that the "New Institutionalist assumption" runs in a direction opposite to that of the "Radical Assumption"; taking as given a certain technology the firm is supposed to be owned by that factor which can earn the highest ownership rent. This rent is equal to the difference between the cost of employing the factor in a firm that is property of the owners of the factor and the cost of employing it in a firm that is property of other owners.

New Institutional Assumption:

For any given combination of factors employed in the firm, ownership of the firm will be acquired by the factor which can get the highest ownership rent. Therefore: capitalist property rights can prevail if, given the factors currently employed, $R^C \geq R^L$ or, alternatively,

$$ZK - HL \geq 0 \qquad (3)$$

workers' property rights can prevail if, given the factors currently employed, $R^L \geq R^C$, or alternatively,

$$HL - ZK \geq 0 \qquad (4)$$

Thus "the Radical assumption" concerns the behaviour of the firm for any *given (capitalist or workers') ownership*. By contrast the "New Institutionalist assumption" concerns the ownership conditions of the firm for any *given combination of factors employed in the firm.* We say that we are in an *organisational equilibrium* when both the Radical and New Institutionalist assumptions are simultaneously satisfied: in an organisational equilibrium the behaviour of the firm under particular ownership conditions must bring about technologies characterised by factor intensities that do not upset the initial ownership conditions. We can therefore give the following definition of an organisational equilibrium:

Definition of Organisational Equilibrium:.

An institution of production is an organisational equilibrium when it is defined by a system of property rights P and a technology T such that T is the technology that maximises rent under the property rights system P, and P is the property rights system that maximises ownership rent with the factor intensities associated with T

In particular, we will be in a capitalist organisational equilibrium when the capitalist rights P^C and the technology T^C are such that:

$$\text{----> } P^C \text{ ----> } T^C \text{ ----> } P^C \text{ ----> }$$

and we will be in a labour organisational equilibrium when the labour rights P^L and the labour technology T^L are such that:

$$\text{----> } P^L \text{ ----> } T^L \text{----> } P^L \text{ ----> }$$

In other words, there will be a capitalist organisational equilibrium (COE) if there is a technology that maximises (1) and satisfies (3) and there will be a labour organisational equilibrium (LOE) if there is a technology that maximises (2) and satisfies (4).

Let:

$$(k^C, K^C, l^C, L^C) = \text{argmax } R^C(k, K, l, L) \qquad (5)$$

$$(k^L, K^L, l^L, L^L) = \text{argmax } R^L(k, K, l, L) \qquad (6)$$

Then a firm will be in *a capitalist organisational equilibrium* (COE) if:

$$ZK^C - HL^C \geq 0 \qquad (7)$$

and in *a labour organisational equilibrium* (LOE) if:

$$HL^L - ZK^L \geq 0 \qquad (8)$$

Condition (7) has an immediate intuitive meaning. Suppose that a firm is under capitalist ownership and the technique of production is such as to maximise profits. Condition (7) implies that, with this technique, the ownership rent occurring to capitalists is at least as great as the rent which workers could obtain if they owned the firm. Hence, with this technique of production, the workers would have no incentive to buy out the capitalists. This is what is meant by a capitalist organisational equilibrium. Condition (8) has an analogous intuitive meaning.

It will also be useful to write the conditions for COE and LOE in the following equivalent ways:

$$K^C/L^C \geq H/Z \qquad (7')$$

$$K^L/L^L \leq H/Z \qquad (8')$$

Conditions (7') and (8') have also an intuitive meaning. Observe that K/L is the ratio of high-agency-cost (H-A-C) capital to H-A-C labour or the H-A-C capital intensity; observe also that H/Z is the agency cost ratio between the capitalist's extra-cost in employing H-A-C labour and labour's extra-cost in employing H-A-C capital. Thus (7') means that a COE is feasible when the intensity of H-A-C-capital is greater than the agency cost ratio and (8') means that a LOE is feasible when the intensity of H-A-C capital is lower than the agency cost ratio. For instance, high agency costs per unit of labour could be compensated by the employment of a great amount of H-A-C capital and make it feasible a COE.

The conditions for the existence of organisational equilibria can also be interpreted as a Nash equilibrium. Organisational equilibria may be defined by the fact that "production managers" choose that technology that maximises profits given the existing property rights system and by the fact that "financiers" arrange property rights that maximise ownership rent given the existing technology. In this sense condition (7) says that capitalist property rights are the best response of "financiers" given the technology chosen by the "production managers". The same condition says also that a H-A-C capital intensive technology is the best response of the "production managers" given the capitalist property rights chosen by the "financiers". Condition (8) has an analogous interpretation[17].

[17] Thus the concept of organisational equilibria is based on the assumption that "financiers" have perfect knowledge of the value of the company for alternative owners using the existing technology but they are ignorant of the value of the company under alternative technologies. This informational structure is based on the idea that technology is not a "menu" that is available for free to everybody but has to be created, developed and transmitted at certain costs in a given institutional framework ,characterised by certain property rights. When certain property rights are missing, much of the knowledge about the associated "optimal" technology is also likely to be missing.

Our point is consistent with the idea that it is very unlikely that an isoquant, describing all the production techniques, can ever be "produced" and be known to all the agents The techniques, that are currently used, are likely to determine the "piece" of the "new" isoquant that is "produced". Property rights act similarly to factor prices and, indeed, affect these prices (when they include also agency costs). In this way, they influence the choice of the current technique and the set of new techniques that are going to be "produced". On the "path dependency" characteristics of technological development see David (1975, 1994), Nelson and Winter (1982), Dosi (1988), and Inkster (1991).

We have already observed that the strength of the effects on property rights on technology depend, via the Radical Assumption, on the value of the elasticity of substitution and that, under standard assumptions, the high-agency-cost capital intensity will be higher under capitalist ownership or:

$$K^C/L^C \geq K^L/L^L \qquad (9)$$

The value of the agency cost ratio H/Z either falls in the interval defined by these two values or outside it[18].

Let us first consider the case in which it falls in this interval. In this case H/Z is such that:

$$K^C/L^C \geq H/Z \geq K^L/L^L \qquad (10)$$

Then both (7') and (8') are satisfied and we have multiple (capitalist and labour) organisational equilibria.

Consider now the cases in which H/Z does not fall in this interval.
H/Z may be smaller than the high-agency- cost capital intensities. Or:

$$K^C/L^C \geq K^L/L^L > H/Z \qquad (11)$$

Then (7') is satisfied but (8') is not satisfied. In this case only a COE exists.

By contrast, if H/Z is such that:

$$H/Z > K^C/L^C \geq K^L/L^L \qquad (15)$$

(8') is satisfied but (7') is not satisfied. In this case only a LOE exists.

Observe that since the ratio H/Z must necessarily fall in one of the three intervals considered above, for any H/Z ratio at least one organisational equilibrium must always exist.

We can visualise the effects of the changes of the agency cost ratio H/Z on the nature of the organisational equilibria in the following figure 4. For H/Z that goes from zero to infinity we have first unique COE equilibria, then multiple equilibria and, finally, LOE unique equilibria.

[18] For a more precise formal analysis of "organisational equilibria" see Pagano (1993a) and Pagano and Rowthorn (1994) and (1996).

0 ------(COE)-----K^L/L^L-----((LOE+COE)------K^C/L^C----- (LOE)-----> ∞
(F2)

(F2) "assumes" a certain value of the elasticity of substitution[19] and it can give us some intuition of the effects of its changes. An increase in the elasticity of substitution widens the values of the agency cost ratio for which multiple equilibria exist. It moves K^L/L^L leftwards and K^C/L^C towards the right widening the interval of multiple equilibria defined by them. Within this interval any initial set of property rights will induce technologies such that their interaction will define organisational equilibria. Thus, an increase of the elasticity of substitution widens the interval where property rights can shape technologies in a self-sustaining manner. Because of the "Radical Assumption", the higher the elasticity of substitution the more powerful the effects of ownership on technology .

5. The speciation of organisational equilibria.

The value of the elasticity of substitution does not only determine the range of the agency cost ratios for which there are multiple organisational equilibria. It influences also their "institutional stability" and their possible inefficiency. A high elasticity of substitution acts like a good "anti-speciation factor" in the sense that it favours the "institutional stability" of the existing ownership relations: it helps the rejection of the non-owning factors, that, because of the increase in their agency costs, threaten to upset the fitness of the existing species of organisational equilibrium. Unfortunately, the "anti-speciation factor" works particularly well with the factors that are the most efficient potential alternative owners and could generate a "superior species" of organisations. These factors are efficient potential alternative owners because of the high agency costs that must otherwise be paid when they are employed by other factors . A high elasticity of substitution causes an unfortunate "preventive treatment" against this possible mutation: these factors are promptly replaced by factors that are cheaper for the present owners.

Indeed, speciation theory offers a useful framework to understand the dynamics of organisational equilibria and the effects of competition. Organisational equilibria cannot gradually evolve into superior organisational arrangements. Because of the institutional stability of these equilibria we should expect that long period of "stasis" characterise these equilibria that may be "punctuated" by periods of sudden changes to new "species" of

[19] The elasticity of substitution has an important role in determining the multiplicity, the "institutional stability" and efficiency of organisational equilibria. On this point see Pagano and Rowthorn (1996).

organisations[20]. Thus, the analysis of the emergence of different organisational equilibria seems to be closer to that of the "punctuated equilibria" discussed by Eldredge and Gould (1972) with reference to the evolution of new species than to any "gradualist" approach[21].

The analogy between the emergence of new organisational equilibria and speciation can be fruitful because the emergence of new organisational equilibria satisfies one of the typical aspects of speciation: the inferiority, or even the impossibility, of the "hybrids" between the two groups that is a necessary condition for differentiating them into different species [22]. For instance, in our simple model any combination of capitalist rights and labour technology "genotypes" produces an organisational "phenotype" that is inferior to both capitalist and labour organisational equilibria.

Referring to the terminology used in definition 1, we can denote by (P^C,T^C) the property rights and the technology characterising a capitalist organisational equilibrium and by (P^L,T^L) those defining a labour organisation equilibrium. Moreover we denote by (P^C,T^L) and (P^L,T^C) the two "hybrids" obtained by mixing together the technology and the property rights of each one of the two organisational equilibria.

Efficiency will rank organisational equilibria and "hybrids" in one of the following ways:

$$(P^C,T^C) \geq (P^L,T^L) \geq (P^C,T^L) \geq (P^L,T^C)$$

$$(P^C,T^C) \geq (P^L,T^L) \geq (P^L,T^C) \geq (P^C,T^L)$$

$$(P^L,T^L) \geq (P^C,T^C) \geq (P^C,T^L) \geq (P^L,T^C)$$

$$(P^L,T^L) \geq (P^C,T^C) \geq (P^L,T^C) \geq (P^C,T^L)$$

[20] For a complete analysis of the analogies between economics and evolutionary biology see Hodgson (1993).

[21] However, as Mayr (1991) points out, even the "speciational evolution", considered by Elredge and Gould, is in some sense gradual. "Such speciational evolution, because it occurs in populations, is gradual in spite of its rapid rate and therefore is in no conflict whatsoever with the Darwinian paradigm". (Mayr 1991 p. 154). However, it is in sharp contrast with the view of some geneticists who see evolution as a gradual change of gene frequencies in populations and do not see the abrupt nature of speciation and the long periods of stasis that characterise the evolution of species (Mayr 1991, p. 137).

[22] If the hybrids between two species were at disadvantage, "selection would act to increase the reproductive isolation because each form would do better not to mate with other and produce disadvantageous hybrids: speciation would be speeded up by selection in sympatry. The process is called *secondary reinforcement*. It is secondary if the reproductive isolation has partly evolved allopatrically, and is then reinforced on secondary contact. The process by which selection increases reproductive isolation independently of the history of the populations is simply called *reinforcement*"(Ridley, 1993 p. 412). Reinforcement is a necessary condition for the new species not to merge if they happen to share the same territory but it is not a sufficient condition for speciation. By contrast "the theoretical conditions for speciation to take place by reinforcement are difficult" (Ridley, 1993 p. 414)

or, in other words, organisational equilibria can be inefficient in the sense that they may be inferior to another organisational equilibrium but they are always superior to the situations of organisational disequilibrium defined by hybrids.

In natural species as well as in organisational equilibria, after a period of one by one changes, each part of the whole becomes optimal given the nature of the other parts: for this reason, after this point, a better arrangement cannot be approached by a gradual change of each one of the parts but it requires simultaneous complementary changes. In this context no gradual tendency to move away from inefficient equilibria can arise. Because of the "complementarities" that are necessary for successful macromutations, these macromutations may never occur; if they do, they will be characterised by abrupt changes leading to the formation of other species that have a substantial number of different features. Like the evolution of natural species, the speciation of organisational equilibria is likely to be "punctuated" by long periods of stasis and by sudden changes. In both cases, their "efficiency" will be limited by the sequence of the mutations that were actually made or, in other words, by their history.

The inferiority of "hybrids" does not only imply that macromutations improving efficiency may never occur. It does also imply that the same competitive pressure, that favours the "micro-mutations" improving the fitness of a given species, may inhibit the "macromutations" that are necessary for the beginning of a new species. Strong competitive pressure may wipe out hybrids before they have a chance to mutate into superior organisational equilibria. Moreover, if there are few members of the new species, "interbreeding" with the old species will produce numerous inferior hybrids and may lead to the extinction of both mutations. Finally, the efficiency of each species of animals as well as organisations depends on its frequency. For instance, network externalities in property rights and in technologies may imply that few different organisational equilibria are not viable.

Since competition can inhibit the formation of new species, speciation is likely to be characterised by "allopatric" conditions; or, in other words, it occurs when a physical barrier protects for an initial period the mutants from the competition of the members of the original species. Although competition can be very useful in selecting the micromutations that improve the efficiency of a given species of organisations, it can inhibit "speciation" of new models of organisation: we should not be surprised if a potentially more efficient organisational model was not generated in America where market competition was very vigorous. Indeed it is consistent with the theory of "speciation" that successful organisational innovations were more likely to occur in post-war Japan where strong property rights shocks were induced by the occupying forces and new models of organisation were protected by competing arrangements for political reasons. However, the effects of these property right shocks cannot be understood

without referring to the "initial conditions" given by Japanese history. To this history we must now turn.

6. Institutional shocks and the "speciation" of the Japanese model.

The Meiji restoration has often been regarded as a peculiar kind of revolutionary "modernisation" [23]. The samurai class and the samurai ethos[24] , which characterised the Togukawa period, had also an important role in shaping the organisational structure of the modern Japanese economy. According to this interpretation, some relations of loyalty typical of the preceding period characterised the relationship of managers to the *zaibatsu* families. who re-paid these loyalty with job security and promotions.

In other words, in comparison to the Anglo-American experiences, the Japanese model of industrial economy shows greater continuity with the type of work relations which existed under feudalism. The Meiji restoration discredited the *shogun* but not the samurai class and its values; by contrast, it was largely a revolution from above. Many samurai were active in the revolution because they perceived that radical reforms were necessary to safeguard national independence even if they endangered their privileges. The struggle for the traditional "market" freedoms had only a secondary role in the case of Japan.

After the second World War, SCAP (the occupying authorities commanded by General MacArtthur) believed the "feudal" relations of the *zaibatsu* firms to be the main cause of Japanese militarism. SCAP tried to dissolve these relations by eliminating the control of the *zaibatsu* families and by breaking the *zaibatsu* firms into smaller units. For the same reason, the occupying authorities fired the senior managers of the companies

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[23] Within the space of one generation Japan jumped from the condition of victim of western nations to the status of imperial power. The pressure to industrialise came from the fear of foreign domination. The steam-powered "black ships" of the American Commodore Mathew C. Perry persuaded some samurai of the fact that only radical reforms could save national independence (See Reischauer, 1990 and Livingstone et alia , 1976a). Less than a century later, the Americans were again the most important external cause of the other major institutional shock of modern Japanese history.

[24] The role of the samurai class and samurai ethos is emphasised in the "orthodox" thesis on the industrialisation of Japan. This emphasis has been somewhat mitigated by some recent studies on Japanese development. On this point see Yamamura (1986). Iwata (1992) traces the Japanese view of the firm as a "Unified Body of Employees" to the business institutions of the Tokugawa period. On the role of Japanese ethos see Morishima (1982). Morikawa (1992) points out that many *zaibatsu* companies originated from the "political merchants" of the Togukawa period.
While the differences between Western civilisation and Japan have been the object of numerous studies, there is one similarity between them that to my knowledge has not received the attention that it deserves. Both middle-age Europe and pre-Meiji Japan were characterised by the co-existence and, often, the struggle between a centralised spiritual authority (the Pope in the case of Europe and the Emperor in the case of Japan) and a centralised "temporal" political authority (the Emperor in the case of Europe and the Shogun in the case of Japan). These conditions were rather unique in world history and, perhaps, in both cases, they favoured the development of the autonomy of the individual and, indirectly, economic development.

whose feeling of "feudal" loyalty was considered to be irreversible. Moreover, in what it is known as the first phase of the American occupation, SCAP encouraged union activities and union rights. Some form of workers' ownership was also encouraged[25].

The U-turn in the SCAP policies was hinted by General MacArthur decision to forbid the general strike in February 1947. Some of the reasons for what has become known as the occupation "reverse course" are stated very clearly in an article published on *Newsweek* in December 1947 .

According to the American magazine, SCAP proposes to create in Japan what it terms a "democratic economy". *Newsweek* observes that no definition for such a term has been given in writing "but, whatever that term may mean, in this instance it is proposed to distribute the wealth of Japan to the workers, farmers, and small traders through the medium of taxes, sales of valuable properties at nominal values, financial assistance, regimentation, and regulation..." (Livingstone et al., 1976b, p. 107)

According to *Newsweek* the tough reforms introduced by SCAP may cause the collapse of the Japanese economy. In particular the magazine criticises the Labour Standard Law, approved in April 1947: impoverished Japan could not afford the same labour standards enjoyed by American workers. Moreover, according to the American magazine Japanese labour contracts go often well beyond American standards:

"Many labour contracts go far beyond such agreements in this country. The agreement between the Japanese company in which a well-known American company had a controlling interest and the company union , in addition to the usual provisions for a closed shop, hours rights of dismissal, cost of living, wages etc. states that part of the profits (not stating which part) shall be paid to the union, and the election and removal of directors, inspectors, and advisers of the company may be accomplished only after consulting the union"(Livingstone et al., 1976b, p. 108)[26].

In December 1947 in a speech at the Congress Senator William F. Knowland commented on the document drawn by the State Department economists. The document was known as FEC (Far Eastern Commission) 230 :

"If some of the doctrine set forth in FEC 230 had been proposed by the government of the U.S.S.R. or even by the labour government of Great Britain, I could have understood it."(Livingstone et al., 1976b, p. 113). What Senator Knowland found

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[25] The "Yasuda Plan" of November 1945 suggested that:

"When the securities, or other property transferred to the Holding Company Liquidation Company, are offered for sale, preference to purchase will be given to employees of the companies involved, and in case of corporate shares the number of such shares that may be purchased by any single purchaser will be limited in order to insure maximum democratisation of ownership."(Livingstone et al., 1976b, p. 81).

[26] Iwata (1992) points out that during this period this practice was not uncommon. "It was not rare to ask for the union's consent to nominees for company president."....."Indeed, some union leaders were later promoted to the presidency or other executive posts in their companies". (Iwata, 1992 p. 183.)

hard to believe, and it is for many people even harder to believe now, was that the *Americans* had been carrying out those policies.

The last period of the American occupation was not only characterised by the restriction of union activities but also by the relaxation of the anti-monopoly laws, disinflation and the "red purge". The international situation had dramatically changed. The issue was not anymore how to "democratise" a former "militaristic" enemy. Instead, it was how, in a short period , Japan could become a reliable partner which could help in the confrontation against the communists. The Korean war accelerated this re-assessment of the American policies[27].

Before the "U-turn", American policies were inspired by the idea that only a "democratic" economy could favour the conditions for the development of a peaceful society. The American project of a "democratic" economy involved the dissolution of the *zaibatsu* and a dispersion of stock to individuals that would have prevented any undesirable concentration of economic power. This limitation of economic power did not only involve a widespread ownership of securities but also some inside ownership especially by employees that would have made possible a control of the top management authority.

The dissolution of the *zaibatsu* companies was achieved transferring the 50 percent of the stock of the *zaibatsu* companies in the Holding Company Liquidation Commission (HCLC) a quasi-government agency. The financial and operational decisions of the companies were restricted by government in ways similar to those of state-owned firms Thus, during post-war Japan, a huge sector of quasi-state-owned firms was created and SCAP had to pioneer a privatisation problem similar to those faced by the ex-socialist countries. Moreover, during the years of the war and the years of quasi-state-owned companies, insiders control prevailed in ways similar to those experienced by the socialist economies.

The war, the purge and quasi-state ownership had greatly reinforced the rights of the insiders and had, in that way, created the conditions for a "pure" internal promotion system that was substantially different from the mechanisms by which control rights were transferred either under family capitalism or in the Anglo-American corporations.

The smooth and fast liquidation of the stock, that had been transferred to HCLC, did not involve the creation of any mechanism by which the internal promotion system could be monitored and changed in case of opportunistic behaviour. Following the intentions of SCAP, ownership became very dispersed and each individual share holder became too small to exercise any outside control on management. At the same time, it was impossible to rely on the inside control of the workers-share holders. Even if the 27 percent of whole disposed stock was bought by employees, it was heavily sold by them

[27] See the readings and the documents collected in (Livingstone et alia, 1976b).

after the market collapse in August 1949. "On average, only the 50 per cent of employees who bought their companies' stocks from January 1948 to June 1949 continued to hold their stock from more than two years" (Miyajima, 1995 p. 381).

According to the Americans, the classic agency problem of controlling management in a situation of dispersed individual share ownership was to be solved not only by employee ownership but also by the "classic" means of equity finance and markets for corporate control. By contrast, while job tenure and internal promotion system were retained, a drastically different system of corporate governance emerged: cross share-holding, debt (*keiretsu*) financing, and a main-bank-delegated monitoring system were going to be the key ingredients of Japan's post-war financial institutions.

Cross share holding was explicitly outlawed by the Anti-Trust Law enacted in 1947. Moreover in same year the separation between banking and industrial concerns, modelled after the Glass Seagall Act in the United States, was introduced in Japan: the Securities Trade Act prohibited banks from underwriting holding and dealing in corporate securities.

The stock market collapse happened in 1949 after the "U-turn" of the policies of the occupation forces. By that time, rebuilding quickly a stable anti-communist Japan had become far more important for the Americans than the implementation the ideal institutions of their model of a "democratic economy". Companies faced a liquidity crisis and the threat of take over mechanism that was especially effective for the ex-*zaibatsu* companies whose stock was heavily liquidated. The stock market crash, occurring within the legal framework introduced by the Americans in 1947, was the first substantial threat to the pure internal promotion system of rights characterising the Japanese companies.

The internal promotion system had emerged from a long experience of insider control. Insider control had, de facto, existed during the war and that, in spite of the "interferences" of family capitalism, had also been substantially present in the *zaibatsu* experience. Under this system not only high and lower rank managers but also many workers had had the incentive to accumulate much irreversible human capital that was now at risk because of the stock market crash. The policies of the Americans had democratised the *zaibatsu* company and extended the incentive to invest in high-agency-cost human capital to many members of the company. Perhaps for the first time in their life time, managers and workers were risking to go through the uncertain consequences of a take-over from outsiders who were not bound by any form of "implicit" contract concerning their firm-specific assets.

For the Americans, upsetting the stability of the micro relation at firm level was made even more dangerous by the fact that in the same period, they were engaged in a "macro confrontation" with the central unions that they believed to be a dangerous congregation of potential enemies sympathetic to the new Soviet enemy. Thus, if the legal framework introduced in 1947 implied a very considerable danger for insiders' control,

the reaction of the insiders was to try to make ineffective and eventually change that legal framework. At the same time, the Americans were too concerned with the stability and the recovery of Japan to impose the full consequences of the governance system that they had set up. It is not surprising that insiders were going to be successful.

Faced with the stock exchange crises and the risk of take-overs managers tried to maintain their stock price by operations similar to "company buyout" even if that was not allowed under Japanese law. While the Americans were mildly upset by this "illegal" action, the Japanese government suggested various ways to maintain equity prices. The sale of the remaining *zaibatsu* stock by public tender was postponed and, in the process for maintaining stock prices, shareholding by institutions such as the insurance companies was not only permitted but also encouraged. Under some conditions banks were also allowed to hold shares and the 1947 prohibition against industrial companies share holding was lifted. Moreover, cross share holding became possible and helped to stabilise the power of top management against the risk of take over.

Cross share holding[28] made it possible the reconstruction of a managerial version of the *zaibatsu* companies (the *keiretsu*) within which the role of the former *zaibatsu banks* became very important. Banks provided a way of solving the agency problems arising from insider control that did not upset the internal promotion governance system and its great potential for accumulating high-agency-cost human capital. The banking system that emerged was going to be known as the *main bank system*. It involved the syndication of loans and the delegation of monitoring to a single bank that, in many cases, was going to be the bank of the *keiretsu* that had emerged from the cross share holding of the companies of the former *zaibatsu* company. In other words, the main bank system allowed risk diversification without "diluting" the monitoring activity among many banks.[29]

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[28] Berglöf and Perotti (1994) show that cross-share holding can support collaboration also in situations where the simple loss of reputation could not. In comparison to the reputation mechanism cross share holding is characterised by the fact that other managers can apply stronger sanctions because they can fire a shirking manager. In equilibrium no manager has an incentive to shirk and no sanction may be applied: it may well be impossible for an outside observer to detect the implicit rules on which co-operation relies. Even if cross-holding could support co-operative outcomes in a wider range of cases, according to Berglöf and Perotti the main bank system is a fundamental "complementary" institution that can rule out inefficient low effort equilibria and discipline managerial behaviour.

[29] The historical origins of the main bank system can be traced to syndicate loans that during the war were formed to finance and monitor the risky business of the munitions companies in the late 1940s. Since its formation, the major participants - the main bank, other core banks, the bankers association, government authorities and the borrowing firms "have shown dynamic flexibility as power has shifted among them". "In each period, syndication was made effective by the leadership with the highest bargaining power among them." (Horiuchi, 1984 p.292) Thus leadership was initially taken by the Bank of Japan and, later, in the 1950s and later the Industrial Bank of Japan (IBJ) and the bankers association. MITI had also an important for large heavy and chemical industry firms. Lately, by the early 1980s the initiative had passed from lenders to borrowers and many large firms have taken banks' willingness to lend for granted. As a result, as it has been shown most dramatically in the bubble of the late 1980s and its aftermath, "the main bank system as a social device for corporate monitoring appears to be under severe test"(Aoki 1984 p. 137).

The implicit contracts, characterising the Japanese firm, imply a "truncation" of the rights of share holders. Job security involves that the owners of the physical assets do not have the right to employ the assets of the firm without the managers and workers of the firm - a right that is well likely to be exercised in the case of hostile take-overs. In other words, the Japanese blend of capitalism has involved the "unbundling" and the redistribution of a right on physical assets that belongs to share holders under both family and securities based governance systems. The interaction between the rights of Japanese employees and the accumulation of their high-agency-cost human capital has produced one of the multiple self-reinforcing organisational equilibria considered in the preceding sections. Thus, the transfer of rights from "insiders" to "outsiders", that is associated to a securities-based decentralised financial system, may well be incompatible with the technology developed under the Japanese post-war institutions of production.

By contrast, the main bank system has been compatible with the system of employee's rights that has characterised post-war Japan. The main bank integrated "ex-ante", "interim" and "ex-post" monitoring that in a securities based market are performed by different agents. This allowed a contingent governance structure under which the bank intervened, having accumulated "inside information", only in cases of financial distress. Thus, the bank did not interfere with the internal promotion system when it was delivering good results. Moreover it did not upset the principles of the internal promotion system when intervention was necessary. The bank could act selectively rewarding and punishing employees on the basis of the "inside" information accumulated thanks to its "ex-ante" and "interim" monitoring activity. In other words, the main bank contributed actively to the exercise of rights that underlined the implicit contracts characterising Japanese firms.

SCAP started by expropriating capitalist families and enhancing working rights and finished by forbidding general strikes and purging the unions. The combined effects of the two institutional shocks was that the workers acquired new rights, and developed new loyalties, but only within their companies. Thus, the unintended result of SCAP was that the "feudal" relations of the *zaibatsu* economy were not replaced by impersonal market relations. They were rather "democratised" and extended to all the "core" workers of each firm.

The workers ended up enjoying rights and safeguards within their companies exceeding those that they have in standard capitalist economies. The loyalty to the *zaibatsu* families was replaced by the loyalty to the company and ultimately to the fellow workers. These rights and safeguards created the conditions under which team-work and difficult-to-monitor and specific human skills could flourish. In turn, the development of these skills increased the value of the rights and safeguards which the workers had within their companies.

We can conclude this section by showing how this short account of the story of post-war Japan can be explained within the framework of the theory of organisational equilibria . The rights and safeguards, introduced by the institutional shocks of occupation period, had the time to reinforce themselves through the development of the "associated" technology. They become self-sustaining and a new "organisational equilibrium" came about[30].

Perhaps, the main steps of the "speciation" of the new organisational model can be summarised as follows:

a) The pre-war organisations were characterised by the fact that a class of managers loyal to the firm already existed under the *zaibatsu* system and the war had enhanced the autonomy of management from the *zaibatsu* families..

b) During the "quasi-nationalisation" of the *zaibatsu* companies the rights of junior managers and workers were enhanced and had the time to favour the associated technology; going back to the *zaibatsu* was not politically feasible. The inferior hybrids between the new rights and the old technology could not be wiped out. By contrast, they had the opportunity to move to the "speciation" of a new organisational equilibrium.

On the other hand, while the insiders were incentivated to become high-agency-cost factors, the kind of privatisation promoted by the Americans was based on legislation allowing share holders to exercise hiring and firing rights and the separation between commercial banking and industry. This created a situation of potential "organisational disequilibrium" between formal rights and technology. The threat of take-overs, following the 1949 stock crash, made this disequilibrium evident and dramatic.

c) The property right system that emerged from the crisis was based on cross share holding and the main bank system. The combination of this property right system with the technology based on specific and difficult to monitor labour allowed the definitive "speciation" of the new organisational equilibrium. Observe that speciation was not only favoured by an initial protection of the new system of "informal rights" but also by the fact that all the companies were involved in this change. Thus, the network externalities among property rights standards and technology did not inhibit but they did rather favour the change. The network externalities in property rights were particularly evident in the cases of cross share holding and of the main bank system whose emergence required that more companies were involved in the institutional change.

[30] Thus, the interpretation, advanced in this paper, does not rely on Japanese cultural specific factors which could not arise in other countries. Japanese-like firms exist also outside Japan. The issue is not to attribute their nature to some unique Japanese character but to explain the conditions that have made them so frequent in Japan in a particular historical period. We share the criticism advanced by Asanuma (1992, p. 2) who argues that too many authors stop the analysis at a particular Japanese word (such as *keiretsu*) assuming implicitly that what is observed "is in every respect to be ascribed to Japan-specific factors". For a convincing criticism of the "culturalist approach" see Koike (1987).

In terms of our evolutionary analogy the "speciation" of the Japanese model fits rather well with the biological emphasis on "allopatric" speciation. A new species of organisation did not evolve in the U. S. in "sympatric" conditions where market competition was more vigorous but rather in "allopatric" conditions in the periphery. There, a particular political situation protected the new model from the old models existing inside and outside the country.

The Americans who had intended to export their institutions to Japan had rather helped the "speciation" of new institutions of production. At the time of the occupation, it would have been very difficult to forecast that, few years later, the Americans should have to consider whether they had better to import the "Japanese model" and try to break their own self-sustaining organisational equilibria. However, importing some of the characteristics of the new organisational species would not necessarily lead to successful organisational innovations and could only produce inferior hybrids. Taking into account the "complementarities" among property rights, technologies and other characteristics of the Japanese model was going to be a crucial factor either for successful imitations or for new successful organisational innovations.

7. Post-war Japan and the post-socialist speciation of organisational models.

The problems that were faced by the Japanese economy after the war share some surprising analogies with those arising in the post-socialist "transition" economies. In both cases the issue has been how to privatise nationalised enterprises (or quasi-nationalised ex-*zaibatsu* companies) and in both cases the role of insiders has been a fundamental problem for privatisation policies. Moreover, in both cases an extra-national agent (SCAP in the case of Japan and the World Bank in the case of the ex-socialist countries) has had an important role in the reform process.[31]

While the success of the Japanese experience is difficult to imitate, it shows that economic evolution cannot be seen as a "transition" to "a priori" given set of optimal institutional arrangements. The history of economic systems can diverge in ways that cannot be easily understood without referring to the complementarities between the agency attributes of the resources and the rights on these resources and without considering the

[31] Amsdem, Kochanowitz and Taylor (1994) observe that one similarity between post-war Japan and the ex-socialist countries is the important role of extra-national agents in the reform process; in this sense the World Bank has a role analogous to SCAP. However according to them (p. 125) in Japan "American occupying forces championed a more equal income distribution through land reform; in Eastern Europe, by contrast, the Bank has regarded the region's highly income distribution as a socialist artefact that would have to disappear with capitalist development. The occupying forces in Japan also championed democratisation, trade union organisation, and employee ownership of former *zaibatsu,* whereas in post-socialist Eastern Europe the Bank has regarded workers' organisations such employees' councils with hostility, as blockages to change". It would be a somewhat disturbing conclusion that it is better to be run by the occupation forces of your enemy than by the World Bank.

different initial conditions that are faced by each economy. The Japanese experience[32] suggests that the desirability of the "end-point" of the "transition" is not independent of the initial conditions and that there may be some initial conditions that can even produce desirable end states that we do not know "a priori".

Different initial conditions characterised also the ex-socialist countries at the time of the 89 revolution[33]. For instance, let us briefly consider the cases of Hungary, the Czech Republic and Poland.

In Hungary , as part of the reform process that had started in that country, substantial powers had been decentralised from above to the managers of the firms. The "revolution" was initiated from above and "negotiated" within the framework of the reforms introduced by the communist regime.

By contrast, in the Czech Republic, decentralisation to the managers of the firms had been weak and late. The political shocks were far more abrupt and sudden than in the Hungarian case and came at the very end of the communist experience.

Finally, Poland was characterised by the existence of strong workers' council that had acquired power as a consequence of the Solidarity movement. The political shocks came very early and involved a conflictual situation of power sharing between the union and the regime. Unlike the case of Hungary the change did not come from above and involved the active participation of workers to the management of firms.

In other words different set of property rights characterised the "socialist economies" in the last years of socialism; thus the type of links outlined in this paper would suggest that the high-agency-cost factors, that had been developed in each country, were very likely to have different characteristics.

In Hungary managers had incentive to make firm-specific investments and acquire private information that made them difficult to monitor agents; in other words, by 1989 they had become high-agency-cost factors. No similar right to take autonomous decisions characterised the Czech economy where a fair degree of centralisation of power characterised the economy until the revolution; as a result firms' managers were not high-agency-cost factors to a any degree comparable to the Hungarian economy. Finally, the experience of working councils in Poland implied that fairly large groups of "core" workers had become high-agency-cost factors. In other words transition was

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[32] Chang (1995) observes that there were relevant similarities among post-war Japan (and the other East Asian successful countries) and the ex-socialist countries such as a high level of education of the population. East Asia should not be considered a "special case" the experience of which is not relevant for other countries.

[33] The analysis of the links between the socialist past and the privatisation processes of these economy is based on Earle, Frydman, Rapaczynski (1993).
Path dependency imply that, in general, insiders and employees ownership as well indirect state ownership are quite common in transition. On these two points see respectively Earle and Estrin (1996) and Pistor and Turkewitz (1996).

characterised by very different political and property rights shocks before and after the 89 revolution. .

Thus, privatisation was not taking place in an uniform environment. Property rights could be changed relatively quickly by the legislation of the new pro-capitalist state and by the conditions imposed by the international organisations. However, it was impossible to change, at least in the short run, the technology of agency characteristics that had emerged under the different socialist experiences. Thus, privatisation assumed different meanings that reflected the nature of the resources inherited from the socialist past; instead of implying the transition to a uniform model of a "private economy", it meant the "speciation" of new forms of organisational models in each one of these countries.

The Hungarians developed a form of managerial capitalism with relatively little control by outsiders and other insiders: in many cases privatisation meant the transfer of ownership and control rights to those managers to whom very substantial power has already been transferred under socialism.

In the case of the Czech republic, firms' managers were not high-agency-cost factors; it was relatively easy to transfer property rights to outsider institution that, centralising the control of the privatisation vouchers, could eventually, paradoxically, inherit those forms of "outsiders' control" that had characterised their own brand of socialism[34].

Finally, in many cases, in Poland, privatisation favoured the acquisition ownership rights by insiders. A very active role in the privatisation process was played by the enterprise management and employee council that had already acquired substantial power during the long revolutionary struggle against the communist bureaucracy[35]. By the time that massive privatisation was launched they had already become high-agency-cost factors.

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[34] However, according to a recent "cover story" of the Wall Street Journal Central European Economic Review by N. King (1996, p. 11).) these outsiders' control is not working. "The Czech experience argues loudly for why privatisation alone doesn't do it. Next must come active owners and a clear responsible market that reward results and punishes the laggards. Both are lacking in Prague". As a result of massive vouchers privatisation "Most big Czech companies are ruled by investment funds, themselves often owned by Czech banks Far from prodding managers to perform - or sacking them- the funds have grown plump on behind the scenes trading and their 2% yearly management fees."

[35] In almost all cases employees have effective veto power on the corporatisation of their company. "The provision of the Law that allows the Prime Minister to force an enterprise to corporatize without obtaining the consent of the employees has remained essentially unexercised, and the pace of corporatization has been very low". (Earle, Frydman, Rapaczynski, 1993 p. 8). Moreover the employee councils and enterprise management have been very active in initiating the process of privatisation through liquidation that involves the transfer of control to a group of insiders (mostly in the form of long-term leasing with an option to purchase). According to Earle Frydman and Rapaczynski (1993, p. 8), this "has been the most common method of ownership transformation in Poland".

Conclusion.

Only further studies and the unfolding of the structural changes, taking place in the ex-socialist countries, will be able to tell whether the new "organisational equilibria" will acquire a sufficient degree of "institutional stability". However, there is no reason for which, in principle, "organisational diversity" may not increase with the emergence of new species in the ex-socialist countries. The successes and the failures of the new arrangements should not be judged comparing each experience to the hypothetical given standard of a "classic" private economy. The Japanese experience suggests that new organisational species should some times be given the benefit of the doubt. If these doubts are overcome and one decides that an active policy of institutional change is necessary, one should still try to consider the interactions between the changes that are being proposed and the situation that is inherited from past history. More specifically, the Japanese experience suggests that, in principle, in some production sectors, a property system where insiders have strong job rights may allow a fairly efficient technology based on "high-agency-cost" labour by insiders and that , vice versa this technology requires property rights limiting some of the powers that share holders enjoy under the classic Anglo-American model[36].

[36] The main bank solution is suggested by Aoki (1995) even if he is aware of the fact that the necessary banking skills may be lacking in the post-socialist countries. Rostowski (1995, p. 34) observes that credit financing is impossible in those countries with very high inflation where the population minimises its holding of domestic and, therefore, the amount of real credit that is available in the economy. Thus, according to Rostowski, credit financing is a possible governance system only in a second phase of the transformation.

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