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The death of *homo economicus*: is there life after welfare economics?

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Abstract

Purpose – This paper draws upon the work of Georgescu-Roegen to outline some theoretical alternatives to standard welfare theory, and to examine the policy implications of discarding the Walrasian core of neoclassical economics.

Design/methodology/approach – Current work in behavioral economics and game theory shows that economic behavior depends on social context, a point understood by social economists for a hundred years or more. This work is related to Georgescu's contributions to utility theory and bioeconomics.

Findings – Neoclassical welfare economics continues to dominate economic theory and policy even though its theoretical foundations, economic man and perfect competition, have been discredited by mainstream theorists. Economic processes take place in specific social contexts and also coevolve with the biophysical universe.

Practical implications – Although modern economics is incorporating many of Georgescu's insights about human preferences it has yet to come to grips with the fact that human economic activity is shaped by its biophysical context. It is believed this should be a major focus of future economic research.

Originality/value – Provides further insights into welfare theory and bioeconomics.

Keywords Economics, Behavioural economics, Social welfare economics

Paper type Conceptual paper

1. Introduction

Neoclassical economic theory has been under continual attack since its inception more than a century ago. This is not unusual. It is normal and healthy for any scientific paradigm to be criticized. What is remarkable about these criticisms, however, is

(1) they are for the most part the same today as they were one hundred years ago; the neoclassical characterizations of human nature and the production process are simplistic to the point of being irrelevant to the description of real-world phenomena; and

(2) these criticisms have gone unanswered and have had no effect on the core of standard economic theory, the general equilibrium framework of Walrasian welfare economics[1].

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The reasons for the second observation are not hard to see. The formalism of Walrasian economics has created a dependence on the computable general equilibrium (CGE) superstructure supporting the economic analysis of market exchange. In every sub-field of economics the CGE framework dominates economic theory and policy recommendations. Another reason for the persistence of Walrasian economics is that it provides a powerful defense of the market economy. The notions of consumer sovereignty and perfect competition fit well with the dominant western ideologies of rugged individualism, progress, and social Darwinism.

Walrasian economic policy is supported by two theorems of Pareto optimality. The first fundamental welfare theorem asserts that Pareto optimality is implied by maximization of preferences under budget constraints and maximization of profits under given technology. The second fundamental welfare theorem asserts that any Pareto optimum can be achieved as a competitive equilibrium with appropriate lump sum transfers (Lockwood, 1987, p. 811; Mas-Colell *et al.*, 1995, p. 308; McKenzie, 1987, p. 510). Much has been written about the stringent conditions for the achievement of Pareto efficient outcomes and about the limitations of efficiency in allocation as the premier policy goal (Bromley, 1990). The leading economic journals are filled with articles questioning the notions of *Homo economicus* and perfect competition. Nevertheless, the achievement of Pareto optimality (or more appropriately Pareto efficiency) depends critically on these two assumptions. And as Lockwood (1987, p. 811) asserts about the second Pareto theorem: "It is no exaggeration to say that the entire modern microeconomic theory of government policy intervention in the economy (including cost-benefit analysis) is predicated on this idea."

A general equilibrium solution is not possible without the behavioral assumptions describing *Homo economicus* and the biophysical assumptions describing perfect competition. Without the axioms of consumer choice, a unique equilibrium does not exist in consumption space. The most complete discussion of the conditions for the existence of general equilibrium is still that of Arrow and Debreu (1954) who assumed, among other things, individualistic behavior, rational expectations, all agents are price-takers, there is no asymptotic information, and a barter economy where money does not appear. The stringent conditions surrounding proof of the existence of a unique competitive equilibrium has prompted Arrow to claim that the model is most useful in demonstrating the inefficiency of real-world markets (Geanakoplos, 1987).

The economic conception of "rationality" is critical to Walrasian welfare theory. If human decisions are not rational and consistent in the strict sense of consumer choice theory, then the concept of Pareto optimality loses all meaning. Regarding *Homo economicus*, two countervailing trends are present in contemporary economics. First of all, empirical evidence from behavioral economics, experimental economics, and game theory has all but demolished the concept of "rational choice" in human decision-making. Secondly, we see today the increasing use of CGE models as the basis for economic policy recommendations including global climate change (Nordhaus, 1992, 2001), biodiversity protection (Weitzman, 1992, 1998), and international trade (Bhagwati, 1979). At the same time the foundations of CGE are being discredited by highly credible research published in the leading economic journals, its use as a policy tool continues to spread unabated.

In the paper we use the work of Nicholas Georgescu-Roegen as a framework to examine the revolution currently taking place in welfare economics. This is useful for

two reasons. First of all, many of the issues being raised now within the economic mainstream were raised decades ago by Georgescu-Roegen and his insights are still relevant and illuminating. Secondly, his work also provides the outline of a general theory of economics going beyond the fictions of economic man and the neoclassical production function.

2. The methodological contributions of Georgescu-Roegen

For half a century Georgescu-Roegen provided a critique of neoclassical theory from within and gave us the outline of alternatives to standard welfare economics. He insisted upon the importance of drawing analytical boundaries relevant to the purposes of specific studies (Georgescu-Roegen, 1971, 1979). He insisted that economics is a social science and that the economic process cannot be understood outside its social and institutional context.

> No science has been criticized by its own servants as openly and constantly as economics. The motives of dissatisfaction are many, but the most important pertains to the fiction of *homo economicus*. The complaint is that this fiction strips man's behavior of every cultural propensity, which is tantamount to saying that in his economic life man acts mechanically. This is why the shortcoming is ordinarily exposed as the mechanistic outlook of modern economics. The criticism is irrefutable. However, the mechanistic sin of economic science is much deeper than this criticism implies. For the sin is still there even if we look at the economic process from the purely physical viewpoint only (Georgescu-Roegen, 1971, p. 1).

Georgescu-Roegen is best known for his work on the production side of economic theory. He argued effectively that the economic process is based on physical laws; particularly important is the Second Law of thermodynamics (Georgescu-Roegen, 1971, 1977). He was a stern critic of the representation of the production process by the neoclassical production function. Georgescu and his followers, particularly Daly (1977) are best known for their insistence that all economic activity is grounded in the biophysical universe. Foreshadowing Wilson (1998) call for "concilience" among the sciences, Georgescu-Roegen insisted that economic laws should be consistent with the laws of physics. His views gained prominence in the 1970s after major energy crises laid bare the dependence of industrial society on fossil fuels. Less well known, but just as important in our view, is his contribution to economic methodology and to the theory of economic behavior. Table I gives the major theoretical differences between welfare economics and Georgescu-Roegen's economic theories.

Methodological individualism assumes that the units of analysis are individual consumers and individual firms. These units can be cast either as "representative agents"

Table I. Walrasian welfare economics and georgescu-roegen's alternative

Walrasian welfare economics	Georgescu-Roegen's alternative
Methodological individualism	Interdependency
Arithmomorphism	Dialectical and qualitative analysis
General equilibrium – mechanics	Economic evolution – thermodynamics
Marginal analysis	Discontinuous change
Substitution	Complementarity, lexicographic preferences
Microfoundations	Hierarchical analysis
Static allocation	Evolution in historical time

or as the "average" behavior of aggregate firms and households (van den Bergh and Gowdy, 2003). In any case, no interaction between individuals or between firms is allowed. Human beings are reduced to "homogenous globules of desire" to use Veblen (1898) characterization of economic man. The alternative is to recognize that the behavior of individuals and firms cannot be adequately represented without considering the interdependencies between them. This requires an approach allowing for multiple equilibria and interactions between agents. Georgescu-Roegen criticizes standard economics for its arithmomorphism, that is, the characterization of economic behavior as having a one-to-one mapping onto the real number line. The alternative is to use what he refers to as dialectical representation. Arithmomorphic representations of economic phenomena are separated from their opposites by a null set, but dialectical concepts are separated from their opposites by a penumbra. For example we may characterize all vehicles as being "cars" or "trucks" but we know that there are many vehicles that have characteristics of both (SUVs or mini-vans for example). Georgescu-Roegen argues that we need both arithmomorphic and dialectical concepts to study the economic process. Some phenomena require quantitative analysis, and others may only be understood using a qualitative approach. Some require both.

In contrast to general equilibrium theory based on the laws of classical mechanics, Georgescu-Roegen advocates an evolutionary approach based on the laws of thermodynamics. The economic process is one of qualitative change characterized by discontinuous leaps rather than by marginal changes. Georgescu-Roegen (1979, p. 325) writes:

> The usefulness of the analytical models that represent similes of actual processes (divested, however, of any qualitative change) cannot be denied. But what matters most in the case of evolutionary structures is the emergence of novelties, of qualitative changes. For these aspects we have no other solution than that of a dialectical approach, involving in particular structural changes. This means to use *words*, instead of numbers, for truly qualitative changes cannot be represented by an arithmomorphic model.

In contrast to the obsession of neoclassical economics with substitution, Georgescu-Roegen stressed the importance of complementarity and lexicographic preferences in economic life. Georgescu-Roegen also questions the microfoundations approach to macroeconomics. As Georgescu-Roegen's mentor, Joseph Schumpeter (quoted in Georgescu-Roegen, 1979, p. 326), put it: "It is therefore misleading to reason on aggregative equilibrium as if it displayed the factors which initiate the change and as if disturbance in the economic system as a whole could arise only from those aggregates." The description of the macroeconomy requires a hierarchical analysis of interacting levels and different time scales.

Welfare economics may have a role to play in describing economic behavior in competitive impersonal markets. But it is inadequate as a general theory of the economic process (van den Bergh and Gowdy, 2003). In the next section we discuss some contemporary work in economics using the basic concepts outlined above. Two themes emerge from the above discussion:

(1) human preference formation is a social process; and

(2) economies are part of and co-evolve with the biophysical universe.

These themes should be considered when formulating economic policies.

3. Toward a science-based economics: two elementary considerations

3.1 Economic choices are social choices

A recurring criticism of welfare economics is that it is based on a outmoded and discredited view of human behavior. Again, these criticisms are not new. But they have taken on a new life with the current resurgence of theoretical and empirical work in behavioral economics, experimental economics and game theory. This work has thoroughly discredited the standard economic model of human behavior and is pointing the way to a scientifically based model of economic decision-making. Evidence from game theoretic experiments such as the Ultimatum and Dictator games, various versions of the Public goods game and the existence of altruistic punishment show that individual-agent-based (non-social) explanations of economic behavior are inadequate to predict real-world economic behavior.

In the Ultimatum game one person, the proposer, is offered a sum of money, say $100, and told to split it with another, anonymous, person, the responder. The responder may accept the offer, or reject it in which case neither person receives anything. In either case the game is not replayed; it is a one-shot game. The model of *Homo economicus* predicts that offers should be as low as possible and that no one would reject a positive offer since "more is always preferred to less". If the smallest unit is $1 then the proposer should offer $1, keep $99 and the respondent should accept it. This prediction never holds when the game is played in "western" societies like those in North America, Europe and Japan. The results are remarkably similar. Two-thirds of the offers are between 40 and 50 percent. Only four proposers out of 100 offer less than 20 percent. More than half of the respondents reject offers less than 20 percent (Sigmund *et al.*, 2002). The Dictator game is played much the same way except that respondents cannot reject offers. They must accept whatever is offered. Even in this game the typical offer is 35 to 40 percent. These results hold even when the amount of money offered is substantial. Cameron (1999) played the ultimatum game in Indonesia with the equivalent of three months salary and the results were the same. Hoffman *et al.* (1996) varied the amount offered from $10 to $100 and found no statistical difference between the results.

A cross-cultural project in 15 small-scale societies revealed sizable differences in the way some cultures play the games (Henrich *et al.* 2001). In some cultures, like the Au of Papua New Guinea, offered more than half the sum to the responder. Other cultures offered as low as 15 percent and no offers were rejected. When the games were administered by the authors in rural Nigeria (Gowdy *et al.*, 2003) proposers offered about the same amounts in the Ultimatum and Dictator games, near 50 percent, and only 1 Ultimatum game offer out of 73 was rejected. These and other games have shown that cross-cultural differences are better predictors of human behavior than individual characteristics like age, gender, or income.

These games and other economic, ethnographic, and experimental evidence from a variety of traditional and market-oriented societies show unequivocally that people often behave altruistically. Experimental results show that pure altruism holds even in simple one-shot games where the participants know they will never interact again (Fehr and Gächter, 2000; Frank *et al.*, 1993). Nowak *et al.* (2000) suggest that human emotional responses have been shaped by millions of years of living in small groups and that our emotions are not finely tuned to anonymous interactions. This suggests the heretical conclusion that impersonal markets might not be the best vehicle for social choices.

Experimental economics provides overwhelming evidence that the utility function is of the form Georgescu-Roegen (1960) proposed: $\Omega = \psi(Y; Y_s)$. Utility is a function not only of individual utility Y but also Y_s which stands for the "criteria by which the individual views the welfare of his community." This result, however, cannot be incorporated into welfare economics. If the utility of one individual depends on the utility of another, the constrained maximization result is undefined (Henderson and Quandt, 1980, p. 297). The optimal consumption of one person depends on the optimal consumption of the other.

A realistic view of human economic behavior is inconsistent with standard welfare theory. Again, this argument has been made for over one hundred years, but the difference today is that economists can explain prosocial behavior in formal game-theory models that can be analyzed mathematically and tested experimentally (Sigmund *et al.*, 2002). Again, these results from behavioral economics undermine the theoretical foundations of welfare economics, behavioral economics has reached a state of sophistication so as to be able to pass the neoclassical gate-keepers, and so it is only a matter of time until the edifice of welfare theory is abandoned.

Economists are very vocal in touting the sanctity of preferences. Randall (1988, p. 217) writes: "The mainstream approach is doggedly nonjudgmental about people's preferences: what the individual wants is presumed to be good for that individual." In fact, in surveys by economists eliciting preferences, expressed preferences are filtered though the outdated and discredited axioms of consumer choice. For example, the lexicographic ordering of preferences, as defined by Georgescu-Roegen (1968) does not allow for substitution between certain goods. A person dying of thirst will give everything she has for another drop of water. These sorts of preferences show up routinely in surveys designed to capture preferences for environmental goods. Spash and Hanley (1995) found that a significant number of respondents refuse to make trade-offs between biodiversity preservation and market goods. Stevens *et al.* (1991) found that 67 percent of respondents agreed with the statement that "As much wildlife as possible should be preserved no matter what the cost." But the common practice among surveyors is to throw out "protest bids" that do not conform to the stylized description of behavior dictated by the axioms of consumer choice.

The following illustrates the point that in surveys of consumer preferences, information is collected that routinely violates the axioms of consumer choice.

Expressed Preferences		**The Filter of Walrasian Economics**		**Distorted Preferences**
[lexicographic ordering, hyperbolic discounting, stewardship]	≡	[transitivity, non–satiation, universal substitutability, methodological individualism]	≡	[everything is tradable, everything has a price, straight–line discounting]

Lexicographic preferences are widespread, people express ethical concerns based on group norms, and considerable evidence exists that people value the medium and distant futures about the same (hyperbolic discounting). Yet collected information about consumer attitudes is filtered through the axioms of consumer choice to fit the "stylized facts" of welfare economics. If economics is to be a serious science, its models of human behavior should describe behavior as it really exists in its social context and not as it "ought to be" in order to be mathematically tractable.

3.2 Economic processes coevolve with the biophysical universe

Much has been written about the fact that the general equilibrium framework of neoclassical economics was borrowed wholesale from classical physics. Mirowski (1989) documents how the "marginalist revolution" of the 1870s was nothing more than a wholesale expropriation of the mathematics of nineteenth century physics. Georgescu-Roegen (1979, p. 321) writes:

> Almost all introductory manuals – those of the most respected authors included – describe the economic process by a circular diagram between "production" and "consumption." The explanation of the outcome of a market is identical with the principle of virtual displacements that is used in mechanics for determining the static equilibrium. Demand and supply schedules may move up and down, but the system always returns to any of the previous equilibria. *Everything is exactly reversible as in mechanics*, where locomotion consists only of a change of place, not of quality.

Contrary to the mechanical description of welfare economics, real economic systems – at least during the past two hundred years or so – undergo rapid, qualitative and irreversible change. Economic change may be driven by exogenous factors such as changing resource endowments or climate change, and also by different patterns and speeds of cultural adaptation, institutional change, and historical accidents. Human beings are biological species with certain unchanging requirements and economic production must obey the rules of the physical universe.

In the framework of welfare economics policy choices are driven by human preferences alone, not by any consideration of the biophysical needs of the human species. In a defense of cost-benefit analysis David Pearce (quoted in Adams, 1993, p. 250) writes:

> There is of course, the view that we "cannot value the environment". But the meaning of this objection is not always clear, and confusion has arisen because economists have themselves used slipshod language. What economic valuation does is to measure *human preferences* for or against changes in the state of environments. It does not "value the environment". Indeed it is not clear what "valuing the environment" would mean.

Pearce is right. The chain of reasoning in cost-benefit analysis goes from "human preferences" to "choices made in a market context" to the "market value of these choices". The neoclassical general equilibrium approach assumes that human preferences for things such as biological diversity and climate stability are reflected in market (or pseudo-market) prices. But an obvious point is that no matter how people "feel" about things like climate change, its detrimental effects will not change. The current worldwide loss of biodiversity and the effects of global climate change are, for all practical purposes, irreversible and will eventually have detrimental and perhaps catastrophic effects on the human species. We may "prefer" to postpone environmental and social problems, but this does not mean they will disappear later if we prefer them to.

One of the most dangerous myths of economic theory is that it is possible to correct any social or environmental problem by "getting the prices right" (Georgescu-Roegen, 1976). And getting the prices right in the context of welfare economics means to get them to reflect market-based preferences no matter what they are based on. Georgescu-Roegen points out that irreducible pollution or irrevocable natural resource depletion cannot have relevant prices since future generations cannot bid on the choice.

How much would current humans pay to bring back species like the Tasmanian tiger or the Passenger pigeon – animals driven to extinction because the price was right to do so. Market value is a subset of the larger category *social value*, which in turn is a subject of the category *total value* (Gowdy, 1997).

Neither is Walrasian "production theory" based on biophysical reality. It is not a theory of production at all but rather a mechanical algorithm for the static allocation of a fixed amount and a given distribution of productive inputs. Likewise, Walrasian "growth theory" is not a theory of growth but rather a theory of the optimal allocation of input growth rates. Progress has been made in describing the economy as being in material balance between raw materials entering the process and waste leaving (Ayres and Kneese, 1969; Faber *et al.*, 1996; Giampietro and Mayumi, 2000). The importance of increasing returns to scale is also well-known to economists. Yet these insights must be discarded in order to use the framework of welfare economics.

A promising alternative to the neoclassical production function is an extended input-output (IO) analysis. According to Duchin (1995, p. 267): "From the point of view of pure theory, Leontief offered his notion of general interdependence *as an alternative to* Walrasian general equilibrium." Dynamic input-output models may be cast in an equilibrium framework but the IO and general equilibrium approaches are very different. IO analysis may be extended to include the role of institutions in the structure of an economy using social accounting matrices (SAM). A further extension of IO may include natural resource accounts (green accounting) showing the primary resources supporting economic activity and the pollution leaving the production process. The IO/SAM approach is still mechanical, but it offers the opportunity to step out of the general equilibrium framework to consider how different scenarios impact economic, social and environmental systems.

4. Understanding institutions is critical for economic theory and policy

The importance of evolutionary, qualitative change is nowhere more apparent than in the field of development economics. In the post-war era the most prominent model of development has been "modernization theory". Modernization theory sees development as a mechanical movement of underdeveloped countries toward the western capitalist model. The primary indicator of development is the rapid growth of GNP. As in the welfare economics model, no attention is paid to distribution. The expectation is that growth in GNP will automatically result in poverty alleviation and general improvements in the living conditions of the population. To promote economic growth, poor countries should implement policies that would facilitate the diffusion of capital, technology, and labor practices from the developed world. The focus is on correcting the characteristics of the poor that hindered them in the quest for development, that is, finding the shortcomings of the poor preventing them from transforming themselves into western economic men. In the modernization view, the save-invest-grow formula for economic growth in a western economy with capitalist-friendly institutions and a well-developed public and private capital infrastructure is a universal path to success (Bromley, 2001; Gowdy *et al.*, 2004).

After decades of the modernization approach to development policies, it is clear that the hope that less-developed countries would follow the "progressive" (Western) path toward prosperity is an illusion. The world's poorest countries have not only failed to develop, their plight has grown steadily worse. As measured by the Human Poverty

Index, more than one-fourth of the population of the developing world lives in abject poverty. Over 20 percent of the world's population, 1.3 billion people, live on incomes of less than $1 per day, and almost one-half the world's population, 3 billion people, earn less than $2 per day. It is estimated that 220 million people in Sub-Saharan Africa, over half the population of the region, are poverty-stricken (Singh, 1999). Per-capita incomes in many countries in Sub-Saharan Africa have declined significantly in the last 30 years. Environmental degradation threatens to undermine economic well-being in the less developed world even further.

Evidence suggests that the worldwide disparity between the rich and poor is increasing. In terms of income distribution, the richest 1 percent of the world's people receive as much as the bottom 57 percent. Fewer than 50 million high-income people receive as much income as the bottom 2.7 billion poor. A US citizen in the bottom 10 percent income category has a higher income than two-thirds of the world's population. This disparity of income is apparently increasing dramatically. In 1988 the ratio between the average income of the world's top 5 percent and bottom 5 percent was 78 to 1. In just five years, by 1993, this ratio increased to 114 to 1 (Milanovic, 2002).

In the field of development economics, as in the case of consumer behavior, we find that by neglecting the social, evolutionary, and qualitative aspects of economic life, welfare economics makes poor predictions and leads to bad policy. As Bromley (2001, p. 6) puts it:

> It is now well understood that a dominant factor in the indifferent performance of many development interventions arises from insufficient understanding of – and explicit attention to – the institutional dimension of existing economic relations. In addition, there has been a serious failure to understand, and thus to predict, how various development interventions will impact those existing socioeconomic relations. Until the institutional dimensions of current and widespread economic stagnation and natural resource degradation are comprehended, it will be difficult, if not impossible, to formulate and implement development assistance activities that will contribute to poverty alleviation and natural resource sustainability. And when natural resource use is not sustainable, economic settings and circumstances cannot possibly be sustainable.

Seduced by the notion of Pareto optimality in allocation, the guiding principle behind economic policies for the transition to development has been privatization. These policies have been devastating for the underdeveloped world (Ake, 1996; Escobar, 1995), and for the post-Soviet economies of Eastern Europe (Bromley, 2000). Privatization cannot work unless the legal and institutional conditions are there to support markets. Georgescu-Roegen (1960) is critical of standard theories of development for ignoring the fact that any economy is characterized by its institutions, not the technology it uses. He argued that peasant economies operate under different institutional rules than urban market economies. Economies may be *qualitatively* different so that differences in per capita income may be a symptom of differences between two economic systems, but such differences cannot be seen as part of a linear coordinate of that difference. An economy with very different institutional rules cannot develop by mechanically mimicking the growth path of the United States and Europe.

Economists increasingly recognize the role of institutions is critical to understanding economic change. But once again economists are so mesmerized by the framework of welfare economics that much of what passes for the analysis of "institutions" is yet another sterile exercise in the mathematics of constrained optimization. In the new

institutional economics, institutions are treated as commodities. The New Institutional Economists refer to the demand and supply of institutional change, whose market-clearing price occurs (of course) where the demand curve for institutional change meets the supply curve for institutional change (see the discussion in Bromley (2000)). Given the framework and assumptions of Pareto efficiency, institutions can act only as constraints on human behavior. According to North (1990, p. 5) institutions are the constraints that human beings impose on themselves. A more realistic view is that institutions can both constrain and expand the scope of human opportunities. In characterizing institutions Richard Nelson [personal conversation] uses the metaphor of a bridge over a swamp. The bridge may constrain the path we take but it also lets us get over the swamp to a new area. Like a bridge over a swamp, the necessary institutions must be in place before a successful transition to a market economy can occur. Institutions are the expressions of collective will that may liberate, restrain, or expand individual action (Commons, 1931). Understanding institutions is critical in developing successful environmental policies and for designing policies that will help the world's poorest. Institutions exist which keep the rich wealthy as well as others which keep the poor impoverished. Institutions may restrain one group and liberate another. Understanding the reciprocity of institutions leads to an appreciation that economic policy is a matter of balancing competing interests (Bromley, 2001).

5. Consilience and synthesis: toward science-based economic polices

It seems clear that the behavioral foundations of neoclassical welfare economics cannot withstand the onslaught of empirical evidence and mathematical reasoning supporting behavioral alternatives to *Homo economicus*. Is there a future for economics after CGE? Yes, the field of welfare economics has been around for a long time and it will certainly survive in a less ambitious form. A better question to ask is what will a post-Georgescu-Roegen economics look like? First of all it seems clear that examining the qualitative features of the economic process will move to the center of economic analysis. Too many policy failures have resulted from a blind reliance on sterile mathematical models of economic activity. This also means that economists will no longer have a "theory of everything" to apply to each and every problem. Economic policies will become more *ad hoc* and context-specific. Two examples from environmental policy will conclude this essay. These concern the seemingly intractable problems of inter-generational equity, and the responsibility of humans for other life forms. As Georgescu-Roegen argued, both these problems are beyond the comprehension of welfare economics. But they do have policy solutions, however messy, if we are willing to step out of that framework.

5.1 Inter-generational equity

In the welfare economics framework, inter-generational equity means maintaining the capital stock necessary to insure a non-declining economic output indefinitely (the so-called Hartwick-Solow rule for sustainability). Output must be measured, of course, using the "right prices". Right prices, according to Solow (1992, p. 16) will "make full allowance even for the distant future, and will even take account of how each future generation will look at its future". As discussed above, even if it were possible to determine the right prices these would reflect only the "feelings" of people living in the present. The perversity of using welfare economics to provide for

future generations is illustrated by the fact that at a discount rate of 5 percent the death of a billion people 500 years from now is worth less than the death of one person today (Heinzerling and Ackerman, 2002). In the neoclassical framework the misleading term "welfare" does not indicate usefulness, but rather the sum of the feelings of individuals at a point in historical time. As Bromley (1998, p. 233) puts it:

> And there is no longer a place in economic discourse for the concept of usefulness. So the province of sustainability must, if it is to be true to the precepts of received dogma, concern not usefulness to future generations, but their level of welfare. In blunt terms, the atmosphere must be kept fit for breathing, not because it would be useful for future generations to be able to breathe but because future generations will otherwise suffer a loss in utility.

Bromley points out that the present generation stands as a dictator over those living in the future. People living in the future have no say in what sort of world we will leave them. The problem of insuring inter-generational equity is deciding how we should provide for innumerable individuals whose values and desires are unknowable. The proper perspective, according to Bromley is that of "regency." As in the case of regents in charge of preserving the Realm for a child king until he can assume the throne, it is the duty of people living in the present to leave persons in the future the means to insure their well-being. We may not know the preferences of those to live in the future but we do know something about the biological and psychological requires of human health and happiness. We know, for example, that humans are part of the web of life of biological species, and we know that clean water to drink and clean air to breathe are essential to human health. In moving from a welfare to a regency perspective, the question of inter-generational equity is changed from "how much to preserve?" to "what to preserve?" (Bromley, 1998).

Most importantly, it is futile to try to use the price system to correct inter-generational "market failure". As Georgescu-Roegen pointed out, irreducible pollution or exhaustible resources cannot have a meaningful market price since future generations cannot bid on them. Market decisions are made by individuals acting at a particular point in time. Is this a proper perspective to take when making decisions that will affect the human species for generations to come?.

> . . . it is utterly inept to transpose to the entire human species, even to a nation, the laws of conduct of a single individual. It is understandable that an individual should be impatient (or myopic), i.e. to prefer an apple now over an apple tomorrow. The individual is mortal. But the human species or a nation has no reason to be myopic. They must act as if they were immortal, because within the immediate horizon they are so. The present turning point in mankind's evolution calls for the individual to understand that he is part of a quasi immortal body and hence must get rid of his myopia. (Georgescu-Roegen, 1976, p. xix).

5.2 Environmental stewardship

The idea of regency for future generations can be extended to encompass responsibility to "the commonwealth of life" (Brown, 2001). The stewardship recognizes that humans feel a responsibility to the natural world. A variety of cultures, including those of the capitalist west, recognize that other species have feelings similar to our own. Other species can think and feel pleasure and pain. Their survival depends on the ecosystems of which they are a part and it is up to humans to act as stewards for these species and their habitats. Brown (2001, "Preface") writes:

> The task before us is monumental: to re-envision our place in the world, from lords and masters to citizens and stewards. Nevertheless, the building blocks are within our reach. Our fore-bearers have given us the tools to refashion our future: the rule of law, science, the market, private property, a free press, the protection of the weak. These and a myriad of other hallmarks of our progress and vision as a species are essential elements in a refashioned future in the commonwealth of life. With courage and resolve we can re-ground education, reinvent industrial society, re-design economics, rediscover trustee government and redirect civil society in service to the commonwealth of life.

Stewardship toward the natural world is widely practiced by private organizations such as The Nature Conservancy, the World Wildlife Fund, Greenpeace, and many others. It is also enshrined in laws throughout the world. The German parliament recently (May 2002) voted to anchor protection for animals in the country's constitution. The vote was 543 in favor to 19 against, reflecting the overwhelming support of the German people. A spokesman for the conservative Free Democratic Party remarked that almost no other issue was as important to Germans as reflected in the number of petitions supporting the measure (Fankfurter Allgemeine, 2002).

Gould (1990, p. 30) is eloquent on this point:

> I suggest that we execute a pact with our planet. She holds all the cards and she has immense power over us so such a compact, which we desperately need but she does not at her own time scale, would be a blessing for us, and an indulgence for her. We had better sign the papers while she is willing to make a deal. If we treat her nicely, she will keep us going for a while. If we scratch her, she will bleed, kick us out, bandage up, and go about her business at her planetary scale.

When it comes to addressing the major environmental challenges we face today, our approach should not be to maximize present discounted utility, but rather to minimize future regrets (Georgescu-Roegen, 1977).

Critiques of welfare economics are not new, but they are now being empirically tested and mathematically modeled. Socially based economic alternatives to the standard economic model of human behavior now hold the promise of reconciling economic theory with known facts from other sciences. Mainstream economics is now seriously considering those issues raised by Georgescu-Roegen decades ago.

Note

1. We use the term Walrasian welfare economics to describe the school of economic thought that came to dominate economic theory in the decades during and following WWII. It is also known as general equilibrium theory, the New Welfare Economics, or neo-Walrasian economics. The general term "neoclassical" is used by most critics of economics but today many economists who call themselves neoclassical are strongly critical of the Walrasian system. For discussions of the demise of Walrasian economics see Bowles and Gintis (2000), Konig and Jongeneel (1997) and Chipman and Moore (1978). Colander (2000) suggests dropping the term "neoclassical" altogether since it no longer refers to a coherent body of theory.

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Brain drains and brain gains: causes, consequences, policy

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Abstract

Purpose – Highly-skilled knowledge workers make location decisions in response to many determinants. This paper seeks to focus on life-time earnings and the desire to pursue a personal research program – a life-long pursuit of interesting puzzles.

Design/methodology/approach – A conceptual discussion and approach are taken.

Findings – The paper argues that access to personally interesting research problems and institutional support structures which allow them to be pursued should be considered alongside pure earnings factors in understanding why researchers and scientists move internationally – and why they may stay put when the economic incentives to move appear high. A nation's innovation policies can be important for influencing such workers' decisions and the impact of these policies shaped by migration flows. This little-researched connection is explored in the final, policy-oriented section.

Originality/value – Provides insights on why, in a world of intensifying competition for scarce knowledge workers, countries can ill afford negative net migration of highly-skilled workers.

Keywords Migrant workers, Knowledge economy, Skilled workers

Paper type Conceptual paper

Introduction

In this paper we ask three questions about the locational choices of workers skilled at contributing to advancing scientific and technological knowledge through research. First, why do some knowledge workers of this kind emigrate from their home country while others stay at home? In common parlance, why do some people join the "brain drain" while others do not?[1] Second, should countries worry when they experience "brain drains"? Third, could government policy – in particular R&D policy – make a difference to the migration flows? These questions are motivated by a variety of observations.

First, the processes of generating and diffusing new scientific and technological knowledge make an important contribution to economic growth (OECD, 2000) and in the long run are essential to sustain it. The links between knowledge building and economic growth are varied and complex. But at their core is a common feature: knowledge is known and can only be put to useful purposes by *people*. Second, research-capable people and knowledge workers more generally are becoming increasingly scarce on a global scale relative to demand. In many western countries, the growth rate of population in general is stagnating and rising the stocks of knowledge workers through reversing the overall trend and/or investing more heavily in education are necessarily long term enterprises. For an individual country, the constraint can only be addressed in the short-term through immigration. Third, while a variety of policy options for influencing the migration decisions of "smart labour" have been canvassed in the literature, interrelationships with government spending on R&D policies have received rather little attention.

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The paper is organised as follows. We review first what we know about workers of the kind that interest us – usually treated in the empirical literature as researchers, scientists and engineers (RSE). We offer a positive analysis of why such people move or stay at home, and then ask about the impact of such movements on source (S) and destination (D) countries. Finally, we seek to draw policy lessons.

Some facts

According to the OECD (2001), internationally comparable data that track the international flow of RSE are extremely limited (OECD, 2001, 10.1). In the USA, 12.8 per cent of all US R&D workers in 1993 were foreign-born, and 29.3 per cent of the R&D workers with science or engineering PhDs were immigrants (Johnson and Regets, 1998). Most of the OECD-born, immigrant scientists and engineers with science and engineering doctorates come from the United Kingdom and Canada. If non-OECD countries are included, there are three times as many foreign-born scientists in the USA from China and twice as many from India as there are from the United Kingdom. This reflects findings (Johnson and Regets, 1998) that Asian science and engineering PhDs in the USA far outnumber Europeans and non-US North Americans and that almost 40 per cent of them make firm plans to stay.

Across the 14 countries of the European Union, experience varies widely. At the level of the overall community, the relative share of non-national human resources in science and technology (professionals, technicians and associate professionals) was 3 per cent in 1998. Luxembourg had by far the largest fraction (33 per cent), followed by Austria (6 per cent), Belgium (5 per cent), UK (4.5 per cent) and Germany (4 per cent). In the United Kingdom, non-national S&T workers formed a higher proportion their group than non-nationals for all occupational groups taken together. But in Germany the fraction of S&T workers of non-national origin was only half that for all occupational groups.

Why knowledge-workers move

For individual migrants, migration offers the prospect of a better life. For each individual, there is a net gain wherever the benefits of life in the destination country exceed those in the country of origin and the difference between the two is not swallowed up by the costs of moving. Benefits must be interpreted widely to depend on both income and the range of other contributions to an individual's welfare – which, for a researcher, will include the interest and challenge of the work as well as the social and work environment more generally. We assume that workers only move if they *expect* a net gain. In this section, we start with differentials in wage and salary earnings, move to total income differentials and finish by taking account of other, often non-financial, factors contributing to individual welfare. We proceed initially without distinguishing between different types of RSE worker. Later we acknowledge that some explanations may be sensitive to a distinction between academic and government RSE workers on the one hand and business RSE workers on the other.

Wage differentials

Standard economic models (Sjaastad, 1962; Todaro, 1969) emphasise expected income differentials as the main driver of migration. To understand the international migration patterns of such workers it is as useful, logically, to ask why many do not

move as it is to investigate why some do. A strategic reason for taking this approach is that when talented workers leave their home country the natural focus is on the attractions of the destination country and the perceived deficiencies of the source nation. Not only does uninformed comment then tend to focus only on outward migration (ignoring inward migration from elsewhere), but it also leaves out the decisions of workers (usually the bulk) who choose to stay. This can give a very distorted picture of both the magnitude of a brain drain and the causes of it. To avoid this type of bias, we thus ask the following question: Why is it that differences in researchers' and scientists; wage incomes are observable internationally and yet not all such knowledge-workers migrate to the country or countries offering highest financial rewards?

Consider first *current* wage differentials. Assume there is good information about *current* RSE wage rates in each country and that current RSE wages in each location are (or are confidently expected to be) a good guide to the *future* – in the sense that the proportional difference between S and D wages is expected to remain constant. If a worker would be paid more this period for doing the same job in D as in S why might he or she *not* move? Answers lie in the following *wage-related* reasons.

(1) On a purchasing-power parity basis, the *buying power* of the wage in D might be lower than that in S. This requires no further discussion.

(2) RSE wages might be *higher relative to the average* wage in S than in D.

As an example of how wage relativities might influence choice, the salaries of academic researchers in Australia declined by about 25 per cent relative to average weekly ordinary-time earnings between 1984 and 2001 (Chapman, 2001). As another indicator, academics over 30 experienced a rise of 80.2 per cent in their average full-time weekly earnings 1986-2000. Comparing with professionals in the same age range, GPs saw their earnings rise 220.8 per cent in the same period, barristers 165.6 per cent and economists 116.3 per cent. Academics might have interpreted their lower and/or falling relative wage as reflecting a lower and/or falling level of their society's valuation of their research and scientific work compared with trends in attitude abroad. Even though RSE workers' salaries might have been higher abroad, Australians might have stayed at home if they felt they were more highly valued, *relative to other professions*, than they would have been overseas. However, as RSE earnings fall towards the national average, the relativity argument becomes increasingly ineffective in preventing emigration – unless a similar trend is also observable overseas.

We now place current wage rates in the context of *expected future wage rate* changes. Workers looking to their future will now compare the present value of expected life-time income streams where, in the simple case, income is generated from wages alone.

A great many factors may cause the NPV of life-time expected wage earnings in D to be lower than that in S even though RSE wages in D are, in the short run, higher. Workers may believe that RSE earnings in D may grow less quickly than those in S because:

(1) they anticipate S in future will enjoy faster economic growth than D, and that this will affect all earnings in each country, hence closing or even reversing the wages gap; and

(2) irrespective of aggregate growth, they expect that expenditure growth on science and R&D in D will, in future, be outstripped by similar types of spending in S.

The first sort of case may be represented by "flash-in-the-pan" growth in D-type countries resulting, perhaps, from a sudden burst of activity based on a temporary natural resource boom. The second sort of case may reflect a belief that future governments in D will take a less generous view of science spending than their predecessors while future governments in S will become more persuaded of the value of "catch-up" arguments.

In a sense, both of these arguments are special cases of the general proposition that potential migrants are as interested in the expected *volatility* of future earnings as they are in the trend. If RSE workers are risk-averse with respect to earnings, they will stay at home for a given mean wage stream with little expected volatility if the alternative in D is the same mean wage stream (or perhaps even a higher one) accompanied by more volatility over time.

How lifetime earning profiles actually unfold depend on opportunities relative to available talent both nationally and globally. Depending on actual and perceived opportunities in D and S on the one hand and national restrictions on access to them on the other, researchers may be encouraged to stay in their country of origin in some cases or encouraged to move in others. We shall argue below that international asymmetries and changes in structures for career development may help explain both initial decisions to migrate and subsequent decisions to return home, i.e. *circular* migration.

Discussion about career structures leads to a deeper and more subtle point than is normally acknowledged in the migration literature. The higher earnings of RSE workers may be available only if the worker ceases to be a research scientist and instead becomes a manager (Stephan, 1996). Whether one moves or stays at home, a higher salary may be contingent upon doing work that one prefers less. In this case, a potential destination country could offer an unambiguously higher lifetime earnings stream, and with less volatility, and yet still not attract some (possibly many) workers from S. If RSE workers in S have a strong preference for their research and perceive they can only earn higher salaries by becoming research managers, or general managers, this may be enough to dissuade them from moving.

Income differentials

Wage or salary earnings form only one part of total financial income. Researchers and scientists may attract income from a number of other sources: returns on financial assets, including equity – in companies for which they work and for which they do not; returns on physical assets, including residential property; and returns on intellectual property, including patents.

To see the relevance of this, suppose the institutional arrangements in S are dominated by wage employment for RSE workers and those in D by equity ownership in private companies. If it were believed that migration to D would necessarily involve private sector employment and, as a consequence, less perceived security and more volatility in income stream, expected mean incomes in D would have to be much higher than in S to attract at least the risk-neutral and risk-averse. Others would be

discouraged from migrating if they perceived valued freedoms to be associated with public sector employment in S which they believed would be denied them by corporate employers in D.

On the other hand, risk-lovers in S would be attracted by perceived income stream volatility. Irrespective of attitude to risk, some might also prefer the challenge of applying ideas to meet user needs in a competitive market environment. And they might relish the prospect of having their income linked to the success of a business focused on innovation management. Locations such as Silicon Valley and Cambridge, UK have attracted research workers from throughout the world precisely because they are unusual in the extent to which they facilitate the market entry of companies built on new ideas (Haour, 2001). Locations like this offer higher incomes because they have an infrastructure of venture capital, and entrepreneurial and managerial training missing in many other locations. The availability of such complementary assets (Teece, 1986) attracts migrants because it enhances the prospects of achieving higher incomes and, more generally, of allowing creative, inventive talents to be consummated and fulfilled.

The above discussion suggests that accurate predictions about migration depend not only on knowledge of international income differentials but also on:

(1) the distribution of attitudes to risk in earning income among RSE populations; and

(2) the distribution of preferences with respect to working environment.

This needs then to be supplemented to knowledge of potential migrants' perceptions of the long-term opportunities they face in each location.

To achieve higher income levels and fulfill personal potential within any country, researchers need not only complementary human, physical and financial assets but they need them in sufficient quantities at critical stages in their development. For academic researchers, research supervision expertise is needed early on and equipment and finance for research assistance later. Perceptions of comparative advantage on this score must very likely have motivated the large number of Asian migrants who have migrated to the USA to enrol in PhDs – and subsequently elect to stay. Researchers building start-up *businesses* require seed capital at the outset, venture capital thereafter, and managerial support throughout. If these are absent, in short supply or rationed at critical points in S but abundant in D, some researchers will migrate as much to realise their personal potential as to enhance their expected income.

Other benefits

Economic incentives only ever tell part of the story in understanding migration decisions and in the case of RSE workers, this is more than usually true. Ties of family, friends and culture will exert a pull to stay at home though in widely varying degrees. For others, the attractions of new experiences and a new start may be strong. For researchers, these arguments acquire a flavour of their own. Researchers' utility is determined by the interest and challenge of the problems and *puzzles* they are asked to address and also by the quality of the *interaction* they enjoy with co-workers. The first point has to do with *tasks*, the second with *professional environment*.

Researchers may stay in S, even in the face of higher, stable expected income streams in D, if the puzzles they work with are more appealing than those they believe

they would encounter in D. For academic researchers, research programs are largely self-determined. They will stay at home if, other things equal, S offers a better base than D for pursuing their interests. A good example here would be the study of ecological systems, animal species or natural resources peculiar to S – such as the Barrier Reef or the platypus in Australia. Business-based researchers may stay home, too, if they continue to be challenged by puzzles at least as interesting to them as they know are available abroad.

As for environment, the accident of being born in a particular country may bring with it exposure to problems and researchers concentrated within particular research trajectories. Such trajectories may be explained by path dependency driven by cumulative knowledge acquisition (problem-solving) surrounding economic development based on comparative advantage (Australia's research strengths in biotechnology, for example, reflect early comparative advantage in agriculture (Hall, 1996)). An individual may wish to stay in S because that is where the richest interactions with the scholarly community take place – and, perhaps, where the best prospects may lie.

Migration and a research career

Current models of general migration admit the influence of life-long income and specialised models of scientists' behaviour introduce puzzle-solving as an important determinant of utility. "What is not recognised is that many puzzles – or, more generally, individuals' research programs – are a life-long challenge as much as earning income is a life-cycle concern".

In the presence of a strong preference for pursing a particular line of research, successful life-long involvement in that program will be the prime determinant of behaviour. It will require sustained and continuous access to supporting infrastructures and to networks working on similar and related problems. For an early-career researcher, such access depends on gaining entry to a PhD program, progressing to post-doctoral work and entering a career in a university or government laboratory involving research for some or all of the time. Expectations of continuity in this case hinge first on the extent of scholarship and sponsorship funding for PhD and post-doctoral work, the fierceness of competition for the funds and the availability of expertise and infrastructure related to the research interests of an individual. Expectations will also be formed about the prospects for entering full-time employment that would permit work in the individual's preferred research area.

Suppose that individuals' commitment to working on a given set of related puzzles remains constant over time. Whether they stay in their home country or leave depends, *ceteris paribus*, on where they think they will be better able to progress in their understanding and advance knowledge in their given area. If the education system in S offers good PhD and postdoctoral support but limited research opportunities subsequently, they will clearly consider migration at some point – but at *which* point depends on the opportunities and institutional structures in D. If researchers from S expect to be able to pursue their personal interests in D at any time in the future, disruption costs may be enough to discourage migration early. On the other hand, entry to research jobs in D for S-workers may be difficult and pursuit of work in a particular area perceived to be most easily achieved by having acquired a PhD on that subject in D itself, along with a network of contacts into D's research community.

If this is so, early-career researchers in S may well migrate to D very early on. Perceptions of long-term prospects for continuing to follow a given research agenda in each country can therefore influence *when* individuals migrate.

The same sort of argument can also explain *circular* migration. While S might offer research opportunities in the field of a worker's choice only to the most experienced and expert. Workers who migrate from S to D early in their careers may return later in life when life-style issues weigh more heavily in their utility.

Impacts on source and destination countries

The second question we posed at the outset relates to national economies rather than individuals: Could it ever be the case that a brain drain might benefit a country? The answer to this question also tells us most of what we might need to know about the converse: Could it ever be the case that the arrival of RSE labour in a country could be to its detriment?

In this paper we are interested in workers of high intellectual quality carrying with them substantial intellectual capital. In general, the loss of such workers will be to the detriment of the economy of a country so long as their marginal social product is positive. It is hard to think of counter-examples[2][3]. Talented people will make a positive (and usually substantial) contribution to economic welfare whether they have much infrastructure to work with or not. Indeed, in countries where physical inputs for research and science are absent or very scarce, the exercise of their own intellectual capability as the principal resource involved is likely to be of special value.

Two important issues deserve comment, however. First, simultaneous migration in both directions allows changes in the *composition* of the RSE workforce without necessarily changing its size. For a given country, one workforce structure may be more socially beneficial than another. At any moment, every country has its own strengths in knowledge bases and knowledge generation, and the accompanying complementary assets. These can, with sufficient commitment and investment, be changed but the *cumulative* and *local* nature of knowledge creation (especially in technology) imply that history counts in having determined what is there – and that every country will be different. While the research preferences of individuals will sometimes have been shaped by the history of their country of birth (see above), the research strengths of others may be better suited to the research resource structures of another nation. As in many other cases, there is scope for a mutual gain from trade – in this case, "trade" in the person-embodied knowledge and skills of RSE workers.

Second, migration influences the *distribution of income*. Emigration of RSE workers unbalanced by immigration should, in equilibrium, result in a higher wage rate for those who remain behind. This will involve a transfer from other factors of production. To maintain the (marginal) returns to capital, it is necessary to balance emigration with immigration. In the case of homogeneous labour, a zero net flow would do the job. In the case of heterogeneous labour, as here, the flows need not balance exactly if (as noted above) incoming labour were to offer a different marginal product, in combination with domestically located resources, from that of emigrants.

Policy responses

The last section suggests that it is generally to a country's detriment to suffer a net loss of RSE workers. Earlier sections argued that such workers *are* internationally mobile

and that their locational decisions are subject to the influence of both earnings opportunities and professional environment. What then should governments do?

The impacts of income tax on migrants, on non-migrants, and of an education subsidy to potential emigrants have been analysed by Bhagwati and Hamada (1982). Qualitative and quantitative restrictions on migration are considered by Djajic (1989). Education and related policies are central to Lucas (1988) and Azariadis and Drazen (1990). The impact of monetary policy (through interest rates) on individual investment decisions relating to human capital is a feature of Romer-style growth models (Romer, 1990).

Here, in the policy section of this paper, we adopt a different focus. Government decisions on the quantity and type of R&D spending can influence both the pecuniary and non-pecuniary rewards for researchers and scientists. Since migration flows are sensitive to these rewards and countries benefit by maintaining or expanding their RSE labour forces, we believe the connections between innovation policy and international migration deserve closer attention. David and Hall (2000) argue: "Immigration policies . . . should be regarded – far more than is usually the case – as part of the institutionally determined parameters that influence the impact of national R&D policy" (p. 1172). By the same token, their work implies that national innovation policy can have an important influence on the migration decisions of RSE workers. National immigration and innovation policies are thus interdependent in interesting ways that deserve closer attention than they have yet received – and which draw together a number of the issues raised earlier in the paper.

In the simplest, "short-run" form of the David and Hall model, the *total* labour supply of R&D workers is exogenous and fixed, and a policy-determined government budget determines the number of *public* R&D workers, given the wage. The remaining workers in the research/science labour force go into the private sector – where a downward sloping marginal product of R&D labour function, together with the number of workers, actually determines the wage received by all R&D workers. Now for policy.

An increase in the government's total R&D expenditure is associated, in the new equilibrium, with:

- a decline in the number of private R&D workers;
- a rise in the average wage of R&D workers (reflecting the impact of new derived demand for R&D labour at a given level of supply); and
- an ambiguous outcome for total private expenditure on R&D (the product of the number of R&D workers and their average wage). R&D spending is most likely to rise if the private R&D sector is relatively large, and to fall when the public R&D sector dominates[4].

In an alternative policy scenario, government holds its total R&D spend constant but funds an increase in the *share of basic research* (by assumption undertaken in the public sector) relative to applied (assumed to be the exclusive business of the private sector). In this case, average R&D wages again rise but this time there is an increase in the equilibrium number of workers in the private sector because of the positive impact on returns to private R&D arising from research spillovers.

The link to migration is through the effect on wages. In the longer run, the labour supply, from either domestic or overseas sources, becomes sensitive (positively) to

policy-induced wage rate changes. As in the short-run case, an increase either in government R&D spending or the share of basic research raises the equilibrium wage. Compared with the fixed labour-supply case, however, the wage elasticity with respect to government R&D spending is smaller. "Other things equal, wages rise most when the labour supply elasticity is small and least when it is large". Changes in the wage are important for understanding how R&D policy influences migration but at the same time, the labour supply elasticity is one of the most important factors affecting the impact of policy on private R&D. We now extend the David/Hall analysis (David and Hall, 2000) to trace out some implications in the two-country framework adopted earlier.

First, suppose initially that the governments of S and D have identical R&D budgets (both in size and composition) and that R&D wages in each are the same. If D unilaterally increases its R&D budget, R&D wages will rise in the short run in line with a fixed national RSE workforce. RSE workers in S will be attracted to D in numbers reflecting the supply elasticity. We would argue that the value of this elasticity will be influenced by the attractiveness of puzzles in D relative to S and the research environment in which they are pursued, compared with that in S. Wages in D will need to rise least to attract any given flow of immigrant RSE workers:

- the richer its menu of research puzzles;
- the greater the opportunity for newcomers to persist with existing interests;
- the more visible and accessible are entry points throughout the life cycle into research career structures; and
- the more supportive are the institutional arrangements for undertaking and sustaining a research career, especially in terms of access to complementary resources, research teams and networks, and professional mentoring.

As RSE workers depart from S, RSE wages will rise as part of the process bringing about international equilibrium in the labour market. Such wages will rise less, the more – relative to D – S can compete in terms of interesting puzzles and offering opportunities to pursue them.

Second, there is, potentially, a significant incentive for governments to invest in making its research sector internationally attractive. In response to an increase in total government R&D spending, real and nominal private R&D spending are most likely to rise (*ceteris paribus*) when the labour supply elasticity is large. Further, the impact of an increase in the share of basic research is likely to have a larger positive effect on private R&D spending than in the fixed labour-supply case. Private sector spending on R&D will also be more sensitive to government policy when private R&D is large relative to government R&D, when public R&D has large spillover effects on private R&D productivity, and when any rise in wage rate has little impact on the marginal product of R&D.

Thus the *leverage* of government R&D policy over private sector outcomes – a focal concern in current debate in the area – will be greatest when international migration is most sensitive to R&D wage variations. Governments can try to compensate for the effects of intrinsic or institutionally imposed limitations on RSE immigration by restructuring the public: private R&D ratio or attempting to enhance spillovers. On the other hand, making immigration look a better prospect can help out governments saddled for political reasons with higher levels of public R&D spending or modest

spillovers[5]. In other words, governments anxious to attract inflows of RSE labour should not rely just on spending more on R&D: they need to attend to the institutional framework that will make a long-term research career look attractive.

An interesting current example of the limitations on such leverage appears to be Germany (Casper *et al.*, 1999). In German industry, long-term contracts are the norm for RSE workers and regulation limits even inter-*firm* migration. The active labour market for mid-career scientists and technicians is thin (Casper *et al.*, 1999, p. 11) which means that entry points to a research career are limited to the earliest stages. The type of research encouraged by institutional arrangements tends to be incremental and requires that researchers invest in knowledge which is highly firm-specific (Casper *et al.*, 1999, p. 22). All of this implies that only very early-career RSE workers prepared to adapt themselves to local needs would be likely to consider international migration to Germany for a long-term applied research career. As noted earlier, non-national employees comprise a much smaller fraction of all S&T workers than is true in relation to all occupations together. We would expect the labour-supply elasticity in this case to be low and the scope for increasing policy leverage in future correspondingly high. Many in Germany perceive there to be an "innovation crisis" in the country and the federation of industry has called for deregulation of labour markets (which could imply more freedom of entry to highly skilled migrants) (Casper *et al.*, 1999, p. 8). As a comparison, the visibly deregulated labour market environment of the US allows for much more career-long flexibility once entry has been achieved, and RSE workers enjoy the prospects of cross-institutional synergy in support of research activity backed by an extensive and flexible venture capital market. Statistics cited earlier imply a high labour-supply elasticity for RSE workers.

Conclusion

Smart labour (RSE workers) will be influenced by international income differentials in making location decisions – but we have argued that they will also be sensitive to the long-term prospects of being able to pursue the problems that interest them. This is both a warning and an opportunity for governments interested – legitimately, for reasons of economic development – in maintaining or increasing their share of the international pool of RSE workers. Increasing total government R&D spending or the share of basic research alone will raise a country's R&D wages and, *ceteris paribus*, attract migrant RSE workers. How international flows are ultimately affected, however, depends on the *differential* impact of these (and other) policies on wage rates across countries and the importance of changes to international wage rate differentials on location decisions, given perceptions about other determinants of the context for a research-driven career. The recent experience of Germany and the US implies an intimate connection between the institutional framework for innovation and the potential for accessing the international RSE labour pool.

Notes

1. Some scholars say a "brain drain" occurs when people leave home to study abroad, and then stay abroad (Kwok and Leland, 1982). Other say it occurs when people work and study at home when young, and work abroad when older (Lucas, 1988; Azariadis and Drazen, 1990). In this paper we shall use the term simply to mean the emigration of skilled workers – in the default case emigration permanently but in extensions to the discussion temporarily.

2. Wong (1995, p. 6302), demonstrates that those left behind are hurt by emigration both when all goods are tradeable and when some are not. This is true even if the average product of labour is raised by the departure of workers.
3. In the growth literature, the departure of skilled labour is, in effect, equivalent, to a hastening of the depreciation of capital and thus reduces the steady state growth rate of the economy (Barro and Sala-I-Martin, 1995, Chapter 9).
4. When public and private R&D spending rise together, they are complements. This is most likely to be seen when the private R&D sector is relatively large – so that the departure of a few at the margin from the private sector results in a significant wage increase for the many remaining. On the other hand, private R&D falls – it is "crowded out" or substituted by higher public spending – if marginal product is little changed. This is most likely in countries where business R&D is dominated by public sector R&D spending.
5. David and Hall (2000) conclude that crowding out is likely to be at its most noticeable when the labour supply elasticity is small and the government R&D sector large relative to private R&D.

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Historical pattern of India's economic growth: salient features

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Abstract

Purpose – This paper aims to present a review of the main features of India's economic growth and human development during nearly 50 years of India's planned development.

Design/methodology/approach – The paper examines all major aspects of India's growth such as growth in net total national product and per capita product, changes in the production and occupational structure resulting from growth, changes in government revenue, infrastructure and social services, in income distribution and in poverty.

Findings – Although the growth was uneven and low up to 1980, the country recorded a reasonable and steady improvement in most aspects of growth. Nevertheless the effects of growth have not produced better results in poverty alleviation.

Originality/value – Reviews the main features of India's economic growth and human development.

Keywords Economic growth, Economic development, India

Paper type General review

Introduction

India's planned development programme that began in 1950-1951 was preceded by a century of development activities which occurred under British Rule. During this period, India experienced industrial expansion, growth of industrial entrepreneurship, expansion of social overheads and growth of financial institutions. In 1950 India not only had a well-built factory sector but also an efficient civil service with a long tradition of responsible administration. There was thus a remarkable endorsement of agents and institutions for implementing planned development programmes. India was in a far better situation than many pre-take off countries particularly in Africa where very little of the prerequisites to development existed and as a result, the problems of initiating and promoting economic development were almost outside the traditional economic framework of analysis.

Since 1950-1951 during the fifty-year period, India completed Nine Five Year Plans and several Annual Plans. The ultimate objective of these development plans had been to remove poverty and activate appropriate social and human development by accelerating the rate of economic growth. So to what extent has India been able to realise that objective? In this paper, we examine the historical pattern of several aspects of India's economic growth during the second half of the twentieth century.

Compared with India's economic performance during the first half of the twentieth century, India's overall economic performance during the second half of the last century, although inadequate of its need, has been quite impressive in many respects. What is more important is that such economic growth has taken place within a reasonable stable macro-economic environment devoid of runway inflation. We now illustrate below, the principal features of India's economic growth.

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Principal features

National income

Table I illustrates the growth of national income and per capita income at current and constant prices and Table II shows the average annual growth rates of net national product and per capita national product.

As the table shows, the net national product at factor cost at current prices increased from Rs 85.74 billion in 1950-1951 to Rs 5460.23 billion in 1992-1993 thus recording an increase of 6268.4 per cent.

During 1980-1981, the net national product prices increased from Rs 404.54 billion in 1950-1951 to Rs 1956.02 billion in 1992-1993 thus recording an increase of only 383.3 per cent. Between 1993-1994 and 1997-1998, at current prices the national income increased from Rs 6859.12 billion to Rs 12,207 billion thus recording a rise of 82.6 per cent. During the same period at 1993-1994 prices the net national increased from Rs 6859.12 billion to Rs 8891.02 billion thus recording a rise only 29.6 per cent.

Although it appears that at current prices, the net national income increased quite substantially during the 42-year period from 1950-1951 to 1992-1993, at 1980-1981 prices, the national income recorded a modest average annual growth of only 3.25 per cent, the so-called Hindu rate. But during the second period, i.e. between 1993-1994 and 1997-1998, the increase of 82.6 per cent in national income at current prices translates into an average annual growth rate of 16.5 per cent. Once again, it is the growth in real terms which is more important. In real term, i.e. at 1993-1994 prices, the increase in net national income of 29.6 per cent represents an average annual growth rate of 6.8 per cent, which is more than double the Hindu rate of growth. The results that we have experienced in the second period are the outcome of the effective implementation of structural reform programmes, which began in India since 1991.

The table also shows that the per capita income at current prices increased from Rs 238.8 in 1950-1951 to Rs 6261.7 in 1992-1993. This represents an increase of 2532.2 per cent. During 1980-1981 prices increased from Rs 1126.9 in 1950-1951 to Rs 2243.1 in 1992-1993. This represents an increase of 99.1 per cent. For the 42-year period, therefore, in real terms, the per capita income grew at an average annual rate of 1.65 per cent. Such a low rate of growth of per capita income in real terms is the resultant of very low growth in national income in real terms and a relatively high population growth.

However, since India's economic development has taken place under Five Year Plans, it is also worthwhile to note the average annual growth rates in net national product and per-capita national product. These are illustrated in Table II.

It can be seen from this table that while at current prices the net national product recorded quite impressive growth during all plan periods except the First Plan and Fourth Plan, at constant prices, the national income recorded very indifferent growth rates. During the Third Plan, the net national product recorded -4.7 per cent average annual growth rates. The tremendous dislocation in production and interruption in economic activities resulting from severe draught and the war with Pakistan in 1965 would certainly have contributed significantly to such a decline in growth rate. The growth started to pick up during the Fifth Five Year Plan, but there was a significant decline in growth during 1979-1980. During the Sixth and Seventh Plans, the growth rate reached 5.5 and 5.8 per cent, respectively. But after the opening up of the Indian economy in 1991, India's growth rate reached nearly 7 per cent during the Eighth Five Year Plan. Also similar results are noticed in the growth in per capita net national income at

Table I. Net national products and per capita net national product

Year	Net national product at factor cost (Rs million)		Per capita net national product (Rs)		Index numbers			
					National product		Per capita national product	
	At current prices	At constant prices	At current prices	At constant prices	At current prices	At constant prices	At current prices	At constant prices
Old series (Base: 1980-1981)								
1950-1951	85,740	404,540	238.8	1126.9	100.0	100.0	100.0	100.0
1951-1952	90,340	414,430	247.5	1135.4	105.4	102.4	103.6	100.8
1952-1953	88,820	426,130	238.8	1145.5	103.6	105.3	100.0	101.7
1953-1954	96,960	452,920	255.8	1195.1	113.1	112.0	107.1	106.1
1954-1955	90,230	471,110	233.8	1220.5	105.2	116.5	97.9	108.3
1955-1956	91,610	482,880	233.1	1228.7	106.8	119.4	97.6	109.0
1956-1957	109,720	509,550	273.6	1270.7	128.0	126.0	114.6	112.8
1957-1958	111,770	500,510	273.3	1223.7	130.4	123.7	114.4	108.6
1958-1959	124,590	538,890	298.1	1288.7	145.3	133.2	124.8	114.4
1959-1960	130,350	547,750	306.0	1285.8	152.0	135.4	126.1	114.1
1960-1961	142,420	586,020	328.2	1350.3	166.1	144.9	137.4	119.8
1961-1962	149,460	601,680	336.6	1355.1	174.3	148.7	141.0	120.3
1962-1963	159,470	611,650	351.3	1347.2	186.0	151.2	147.1	119.5
1963-1964	182,580	642,160	393.5	1384.0	212.9	158.7	164.8	122.8
1964-1965	213,730	689,420	450.9	1454.5	249.3	170.4	188.8	129.1
1965-1966	222,470	657,340	458.7	1355.3	259.5	162.5	192.1	120.3
1966-1967	252,150	660,890	509.4	1335.1	294.1	163.4	213.3	118.5
1967-1968	297,450	715,190	587.8	1413.4	346.9	176.8	246.1	125.4
1968-1969	313,110	732,850	604.5	1414.8	365.2	181.2	253.1	125.5
1969-1970	344,210	781,770	650.7	1477.8	401.5	193.2	272.5	131.1
1970-1971	365,030	822,110	674.7	1519.6	425.7	203.2	282.5	134.8
1971-1972	387,170	826,750	698.9	1492.3	451.6	202.4	292.7	132.4
1972-1973	425,100	819,910	749.7	1446.0	495.8	202.7	313.9	128.3
1973-1974	523,620	860,100	902.8	1482.9	610.7	212.6	378.1	131.6
1974-1975	612,900	871,160	1033.6	1489.1	714.8	215.3	432.8	130.8
1975-1976	646,230	954,330	1064.6	1572.2	753.7	235.9	445.8	139.5
1976-1977	695,230	962,530	1121.3	1552.5	810.9	237.9	469.6	137.8
1977-1978	797,490	1,036,700	1257.9	1635.2	930.1	256.3	526.8	145.1

(*continued*)

Table I.

Year	Net national product at factor cost (Rs million)		Per capita net national product (Rs)		Index numbers			
					National product		Per capita national product	
	At current prices	At constant prices	At current prices	At constant prices	At current prices	At constant prices	At current prices	At constant prices
1978-1979	852,980	1,094,660	1316.3	1689.3	994.8	270.6	551.2	149.9
1979-1980	923,240	1,029,370	1390.4	1550.3	1076.8	254.5	582.2	137.6
1980-1981	1,106,850	1,106,850	1630.1	1630.1	1290.9	273.6	682.6	144.7
1981-1982	1,287,970	1,171,400	1861.2	1692.8	1502.2	289.6	779.4	150.2
1982-1983	1,418,750	1,197,040	2003.9	1690.7	1654.7	295.9	839.2	150.0
1983-1984	1,665,500	1,293,920	2303.6	1789.7	1942.5	319.8	964.7	158.8
1984-1985	1,850,180	1,338,080	2503.6	1810.7	2157.9	330.8	1048.4	160.7
1985-1986	2,061,330	1,390,250	2730.2	1841.4	2404.2	343.7	1143.3	163.4
1986-1987	2,284,020	1,442,420	2962.4	1870.8	2663.9	356.6	1240.5	166.0
1987-1988	2,588,910	1,497,870	3285.4	1900.9	3019.5	370.3	1375.8	168.7
1988-1989	3,092,890	1,657,500	3842.1	2059.0	3607.3	409.7	1608.9	182.7
1989-1990	3,572,850	1,773,150	4346.5	2157.1	4167.1	438.3	1820.2	191.4
1990-1991	4,180,740	1,864,460	4983.0	2222.2	4876.1	460.9	2086.7	197.2
1991-1992	4,796,120	1,861,910	5602.9	2175.1	5593.8	460.3	2346.3	193.0
1992-1993	5,460,230	1,956,020	6261.7	2243.1	6368.4	483.5	2622.2	199.1
New series base: 1993-1994								
1993-1994	6,859,120	6,859,120	7698.2	7698.2	100.0	100.0	100.0	100.0
1994-1995	8,030,900	7,326,510	8844.6	8088.8	117.1	106.8	114.9	104.8
1995-1996	9,365,480	7,859,900	10103.0	8478.9	136.5	114.6	131.2	110.1
1996-1997	10,895,830	8,475,110	11554.2	8987.4	158.8	123.6	150.1	116.7
1997-1998	12,207,160	8,891,020	12729.1	9271.1	178.0	129.6	165.4	120.4

Sources: GOI (2000) and Economic Survey (1999-2000), Government of India, New Delhi

Year	Net national product at factor cost At current prices	At constant prices	Per capita net national product At current prices	At constant prices
First Plan (1951-1956)	1.5	3.6	−0.4	1.8
Second Plan 1956-1961)	9.4	4.0	7.3	2.0
Third Plan (1961-1966)	4.1	−4.7	1.7	−6.8
Three Annual plans (1966-1969)	12.2	3.7	9.8	1.5
Fourth Plan (1969-1974)	11.0	3.3	8.5	1.0
Fifth Plan (1974-1979)	10.4	5.0	7.9	2.7
Annual Plan (1979-1980)	8.2	−6.0	5.6	−8.2
Sixth Plan (1980-1985)	15.1	5.5	12.6	3.2
Seventh Plan (1985-1990)	14.1	5.8	11.7	3.6
Two Annual Plans (1990-1992)	15.9	2.5	13.5	0.4
Eight Plan (1992-1997)	16.2	6.6	14.0	4.6

Sources: Same as Table I

Table II. Average annual growth rates of net national product

constant prices. During the Third Plan and the Annual Plan of 1979-1980, the income growth declined by 6.8 and 8.2 per cent and it began to resume upward trend since the Fifth Plan and reached 4.6 per cent during the Eighth Plan. This was the highest rate of growth at constant prices during the entire period of Five Year Plans. It should further be noted here that despite the inconsistent growth rate recorded during the Five Year Plans, this performance in both national income and per capita income growth represents a distinct improvement in any historical period for which information is systematically available. It certainly represent an acceleration of growth recorded during the first 50 years of the twentieth century (Bhagwati and Desai, 1970)

Production and occupational structure

To what extent has this process of expansion of national income been accompanied by marked shifts in the production and occupational structure?

Table III records the available data on the absolute and relative distribution of net national product by sector of origin at 1980-1981 prices.

The table shows that the contribution of net income from agriculture has declined substantially from 46.54 per cent in 1970-1971 to 27.55 per cent in 1996-1997. The share of mining and quarrying in total net product initially increased slightly up to 1991-1992 after which year it started to decline again and in 1996-1997, it reached 1.12 per cent which was marginally lower than the share in 1970-1971. Therefore, the mining sector's contribution remained virtually stagnant. Along with mining the contribution of construction activities also declined during this period, but the contributions of manufacturing and other sectors increased.

Although it remained well below 25 per cent, the contribution of manufacturing to net national product increased considerably during this period. The contribution of travel, holiday and restaurants increased form 11.5 to 16 per cent, that of transport, storage and communication from 2.3 to 4.2 per cent, that of financing, insurance, etc. from 7.2 to 12.4 per cent and that of commonly social and personal serviced from nearly 10 to 11 per cent.

Table III. Net domestic product at factor cost by industry of origin (1980-1981) (Rs Million)

Item	1970-71 1	1980-81 2	1985-86 3	1990-91 4	1991-92 5	1992-93 6	1993-94 7	1994-95 8	1995-96 9	1996-97 10	% increase between 1970-71 11
Net domestic product at factor costs	831,720 (100)	1,130,400 (100)	1,402,260 (100)	1,902,180 (100)	1,905,530 (100)	2,003,810 (100)	2,126,040 (100)	2,289,640 (100)	2,451,040 (100)	2,634,270 (100)	216.72
Agriculture, Foresty & Fishing	387,110 (46.54)	440,910 (39.00)	511,560 (36.5)	621,270 (32.70)	604,210 (31.70)	641,080 (32.00)	664,600 (31.25)	698,160 (30.49)	672,640 (27.44)	725,930 (27.55)	87.52
Mining and Quarrying	10,270 (1.23)	14,740 (1.30)	16,910 (1.20)	26,970 (1.40)	27,700 (1.50)	27,620 (1.40)	27,390 (1.28)	27,460 (1.19)	30,310 (1.23)	29,680 (1.12)	189.00
Manufacturing	127,630 (15.34)	186,980 (16.54)	264,130 (18.80)	394,080 (20.70)	373,150 (19.60)	386,490 (19.30)	418,630 (19.69)	469,260 (20.49)	537,600 (21.93)	574,250 (21.79)	349.93
Electricity, Gas and Water Supply	5,670 (0.70)	9,120 (0.80)	13,210 (0.90)	21,390 (1.10)	23,830 (1.30)	26,230 (1.30)	27,610 (1.29)	31,350 (1.36)	43,210 (1.76)	35,970 (1.36)	534.39
Construction	42,710 (5.13)	57,710 (5.10)	66,790 (4.80)	91,470 (4.80)	93,610 (4.90)	96,890 (4.80)	97,650 (4.59)	103,900 (4.53)	114,160 (4.65)	120,060 (4.55)	181.10
Trade, hotels and restaurants	95,560 (11.50)	143,220 (12.70)	190,870 (13.60)	257,810 (13.60)	259,730 (13.60)	277,440 (13.80)	299,620 (14.09)	336,110 (14.67)	388,430 (15.84)	420,910 (15.97)	340.46
Transport, storage and communication	19,460 (2.33)	37,240 (3.30)	52,300 (3.70)	73,910 (3.90)	77,670 (4.00)	81,040 (4.00)	84,490 (3.97)	91,380 (3.99)	99,340 (4.05)	109,330 (4.15)	461.81
Financing, insurance real estate and business services	60,960 (7.32)	92,640 (8.20)	129,090 (9.20)	195,150 (10.30)	216,560 (11.40)	226,380 (11.30)	256,010 (12.04)	274,030 (11.96)	300,760 (12.27)	326,860 (12.40)	436.18
Community, Social and Personal Services	82,350 (9.90)	120,840 (10.70)	157,400 (11.20)	220,130 (11.60)	229,070 (12.00)	240,590 (12.00)	250,040 (11.76)	257,440 (11.26)	273,590 (11.16)	291,280 (11.95)	253.70

Notes: Figures in parentheses indicate percentage distribution

Sources: Central Statistical Organisation, Government of India (1997), Statistical Abstract, India (1997), New Delhi: Government of India

Last column of the table shows the percentage increase or decrease in contribution in absolute amount to net domestic product by the industries. The largest increase in contribution in absolute terms recorded by industries in descending order of importance between 1970-1971 and 1996-1997 were 534.39 per cent by electricity, gas and water supply, 461.18 per cent by finance, insurance, real estate and business services and 349.95 per cent by manufacturing. The lowest increase in contribution in absolute terms was only 87.52 per cent by agriculture, forestry and fishing.

Now we present the percentage distribution of employment in industries in Table IV.

It can be seen from Last column of Table IV that between 1981 and 1998 modest increases in employment were recorded in all other industries except finance, insurance and community and social services in which employment increased by 72.56 and 33.07 per cent, respectively. The table also shows that the shares of all industries except finance, insurance and community and social services, in total employment generation had declined marginally during this period. The shares of finance and community services increased from 4.12 and 37.48 per cent in 1981 to 5.78 and 40.52 per cent in 1998. It would therefore appear that although the economic growth accelerated since the mid 1970s, the growth did not manifest itself in employment generation. The major burden of the generation of employment was however, borne by manufacturing, and community and personal services, which together accounted for 76.01 shares in total employment in 1981 as well as in 1998.

Governments' tax collection effort and tax revenue

Higher economic growth by bringing more people and businesses into the tax assessment fold and by raising the income level of existing taxpayers increases the size of the tax revenue which in turn helps raise the level of domestic savings which in its turn helps finance the level of investment needed to maintain and accelerate the rate of economic growth. In Tables V and VI we present the governments tax effort and the revenue collected.

As the table shows, during the first three Five Year Plans (1951-1966), the government made sincere effort to raise the level of Governments' revenue through tax

Item	1981	1987	1990	1993	1996	1998	Percentage increase in employment
Total employment (in millions)	22.87	25.38	26.34	27.17	27.48	28.16	23.10
Agriculture, hunting, etc.	5.77	5.53	5.40	5.43	5.22	5.09	8.55
Mining and quarrying	4.14	4.06	4.04	4.02	3.93	3.64	8.43
Manufacturing	26.43	24.70	24.27	23.53	24.29	24.31	13.26
Electricity, gas and water	3.57	3.26	3.55	3.56	3.53	3.53	21.76
Construction	5.07	4.89	4.56	4.51	4.33	4.20	1.89
Wholesale and retail trade	1.72	1.61	1.67	1.65	1.71	1.72	23.09
Transport, storage and communication	12.10	12.60	11.67	11.44	11.28	11.18	13.72
Finance, insurance and real estate	4.12	45.06	5.28	5.62	5.67	5.78	72.56
Community, social and personal services	37.48	38.90	39.77	40.20	40.00	40.52	33.09

Sources: Same as Table I

Table IV. Percentage distribution of employment in industry (public and private) during 1981-1998

Table V.
Share of sources of revenue in gross tax revenue (in per cent)

Items	1950-1951	1966-1967	1990-1991	1991-1992	1992-1993	1993-1994	1994-1995	1995-1996	1996-1997	1997-1998
Total direct tax	36.79	23.36	19.10	22.60	24.30	27.60	29.20	30.20	30.20	35.90
Total indirect taxes	63.20	76.74	78.90	75.50	73.70	71.0	70.60	69.60	69.60	62.90
Customs duties	25.07	18.37	35.90	33.00	31.90	29.30	29.00	32.10	33.30	28.70

Sources: (a) Bhagwati and Desai (1970), and GOI (1994, 1999)

Table VI. Tax revenue as percentage of GDP

Items	1950-1951	1966-1967	1990-1991	1991-1992	1992-1993	1993-1994	1994-1995	1995-1996	1996-1997	1997-1998
Total direct taxes	2.42	3.13	1.9	2.5	2.6	2.7	2.6	2.8	2.8	3.3
Total indirect taxes	4.16	10.76	7.8	8.3	7.8	6.9	6.3	6.4	6.4	5.8
Customs duties	1.65	2.58	3.5	3.6	3.4	2.9	2.6	2.9	3.0	2.6
Total taxes	6.58	14.03	9.90	10.80	10.49	9.15	9.10	9.10	9.10	9.10

Sources: Same as Table V

collection. In 1950-1951, at the beginning of the First Five Year Plan, the total direct taxes nearly accounted for 37 per cent of the total tax revenue. The total indirect taxes and customs duties accounted for 63.20 and 25.07 per cent, respectively. Hence although indirect taxes played a major role in raising the level of domestic saving, direct taxes also made valuable contribution. However, gradually the share of direct taxes in total tax revenue continued to decline throughout the first three plan periods and in the 1970s and 1980s, and the share of indirect taxes continued to increase during the same period. In 1990-1991, the direct taxes contributed only 19 per cent to total gross tax revenue, but indirect taxes and particularly, customs duties accounted for nearly 79 and 36 per cent of total gross tax revenue, respectively. Hence significant reliance was placed an indirect taxes and particularly on customs duties to raise the level of tax revenue. But the scenario changed after 1990-1991. Reform of the tax system had been an important element of structural reforms. The strategy had aimed at moving towards a simpler system of taxation with moderate rates, few exemptions and a wider tax base. Tax reforms therefore, included a structural shift in the composition of tax revenue. As a result since 1990-1991, the share of direct taxes in the gross tax revenue jumped from 19.1 to 35.9 per cent in 1997-1998 with a corresponding decline in the share of indirect taxes from 78.9 to 63.9 per cent. Also the share of customs revenue in the total gross tax revenue declined from 35.90 to 28.70 per cent. The reduction in the general level of customs tariff is reflected in a sharp reduction of the collection rate. Increase in the share of direct taxes is better also from the point of view of both equity and efficiency. Now in Table VI we present the shares of tax revenue in GDP.

Table VI also shows that the share of direct taxes in GDP has been rising and that of indirect taxes in GDP has been falling. The share of custom duties in GDP has been falling, but also the share of total taxes in GDP has been falling. But despite the reform of the tax system, the government's tax collection effort was better in 1966-1967 than in 1997-1998.

Infrastructure and social services

Growth in national income has also been accompanied by considerable improvement in the supply of infrastructure and social services. One has however, to remember that increase in the supply of services or facilities does not automatically ensure the improvement in the quality of such services. When the quantity supplied of such services and facilities increase, it becomes increasingly difficult for the providers of such facilities and services such as the government and its agents to maintain and improve the quality. For example, if the number of schools and pupils increase, it may be difficult for the teachers to improve the quality of teaching due, among other things, to the lack of sufficient teachers and teaching aids, etc. Nevertheless, increase in the number of schools and teachers do help increase the supply of human capital. In Table VII we present some of the indicators of improvement in infrastructure and social services.

As the last column of the table shows higher economic growth enabled the country to continuously improve the supply of services for building up social overhead capital necessary for accelerating the pace of economic growth. However, it appears that least emphasis has been placed on and therefore, least improvement was recorded in the expansion of primary education which is now recognised as one of the most important

Table VII. Growth in activities in infrastructure and social services

Items	1950-1951	1960-1961	1970-1971	1980-1981	1990-1991	1991-1992	Percentage of increase between 1950 and 1991/1992
Number of students in Primary schools	19,154,457	34,993,829	57,045,441	74,194,739	97,375,300	100,939,202	+427.04
Number of students in middle schools	3,119,958	6,704,810	13,315,170	20,724,364	34,025,987	35,647631	+1046.00
Number of Students in High/Higher Secondary Schools	1,441,254	3,345,197	7,600,543	11,871,161	19,057,399	20,338,186	+1311.11
Number of students enrolled in generalist courses							
BA., BSC. and BCom[a]	100,687	348,496	1,435,909	1,913,126	3,566,107	3,813,042	+3687.02
MA, MSC and MCom[b]	18,484	52,836	144,023	238,916	395,994	423,416	+2280.52
Research[c]	1,434	4,674	11,177	27,398	16,486	17,864	+1145.74
Diploma/Certificate[d]	1,199	3,632	18,788	23,089	35,265	37,705	+3044.70
Number of students enrolled in professional education courses							
Education[a]	4,135	19,005	56,922	71,204	117,231	125,345	+2936.31
Engineering/Technical[b]	12,094	42,405	87,257	128,937	244,007	260,905	+2057.30
Medicine[c]	15,260	32,238	89,569	110,020	165,812	177,288	+1061.78
Agriculture[d]	3,131	10,057	27,195	39,231	54,561	58,339	+1763.27
Medical facilities							
Number of hospital beds (all types) (000)[a]	117	230	349	569	811	834	
Number of registered medical practitioners[b]	61,480	80,084	148,523	268,707	NA	NA	+337.06
Number of registered nurses[c]	16,550	35,584	80,620	113,455	340,208	385,410	+2228.76
Electricity: installed capacity (thousand MW)	2.30	5.60	16.30	33.30	74.70	102.00 (a)	+4334.78 (c)
Energy generated (Billion kWH)	6.60	20.10	61.20	119.30	289.40	463.80 (a)	+6927.27 (c)
Railways: freight carried (million tonnes)	20.20	30.90	47.90	64.08	135.16	208.75 (a)	+933.41 (c)
Length of surfaced roads (thousand KM)	157.00	263.00	398.00	684.00	1090.2	1517.30 (b)	+866.43 (d)

Notes: [a]the year 1997-1998; [b]the year 1995-1996; [c]the percentage change between 1950-1951 and 1997-1998; and [d]the percentage change between 1950-1951 and 1995-1996

Sources: Same as Tables I and III

prerequisites to achieving higher economic growth and development. On the other hand, most emphasis was placed on and therefore, largest increase in enrolment was recorded in generalist tertiary education. The enrolment in BA, BSc and BCom degree courses increased by 3687.02 per cent and the enrolment in diploma and certificate courses increased by 3044.70 per cent, although the contribution of generalist education in the formation of human capital will not be so strong as that of primary education. The third largest increase in enrolment was recorded in degree courses in education. Enrolment in engineering and technical degrees also increased significantly. Similarly, medical facilities also expanded greatly. There were considerable improvements in the generation and supply of electricity, increase in freights carried by railways and expansion of surfaced roads.

Price level

Since growth with price stability helps the economy achieve its economic and social development objectives without the adverse effects of inflation, we should now look at the long run trends in price levels in India during the period of planned development. These are illustrated in Table VIII.

It can be seen from the table that there was no abnormal increase in the wholesale prices of any group of commodities. Generally non-food articles rose at a higher rate between 1981-1982 and 1995-1996 than the prices of other groups of commodities including food grains. Overall increases in prices indices for all groups and sub-groups

Table VIII. Index number of wholesale prices in India, base: 1981-1982 = 100 (Financial year averages)

Year Major groups and sub groups	Primary articles	Food grains	Non-food articles	Manufactured products	All commodities	Terms of trade between primary goods and manufactured goods
1982-1983	106.70	109.00	100.80	103.50	104.90	103.09
1985-1986	125.70	124.50	204.40	124.50	125.40	100.96
1988-1989	160.10	161.80	160.20	151.50	154.20	105.57
1989-1990	163.6	165.40	166.00	168.60	165.70	97.03
1990-1991	184.90	179.20	194.20	182.80	182.70	101.14
1991-1992	218.30	216.40	229.20	203.40	207.80	107.32
1992-1993	234.60	242.40	228.70	225.60	228.70	102.57
1993-1994	250.90	260.70	249.10	243.20	247.80	101.25
1994-1995	283.20	293.20	299.00	268.80	274.70	103.09
1995-1996	304.10	313.10	321.70	293.10	295.80	102.80
Increase or decrease in price indices between 1982-1983 and 1995-1996	+197.40	+194.00	+220.90	+189.60	+190.90	−0.29
Average annual growth between 1981-1982 and 1995-1996	5.35	5.23	6.25	5.06	5.10	

Sources: Same as Table III

of commodities were balanced. This is also reflected in the terms of trade between agricultural goods and manufactured goods, which remained reasonably stable during this period. The terms of trade were generally favourable to the agricultural sector except in 1989-1990. This of course meant that the growth and expansion of industrial sector was not adversely affected by the rise in prices of food grains and raw materials. On the other hand, the agricultural sector's capacity to generate surplus, and also to purchase manufactured products was not adversely affected by very unfavourable terms of trade. It can also be seen from the table that during the 13-year period from 1982-1983 to 1995-1996, the wholesale prices of all product categories except non-food articles rose at the average annual rate of only around 5 per cent. However, during the first 12 years of India's planned development, the rate of growth of prices on average, was not more than 2 per cent (Bhagwati and Desai, 1970). This was an impressive performance. There was also not a significant difference between the Consumer Price Index numbers for industrial workers and agricultural/rural labourers. For example, between 1961 and 1981, the CPI numbers for agricultural labourers and rural labourers were higher than those for industrial workers by only 7.

Industrial finance

Since India gained independence, the government directly assisted in putting up essentially the following four major financial institutions to provide finance to state sponsored institutes:

(1) The Industrial Financial Corporation of India (I.F.C.);

(2) The National Industrial Development Corporation (N.I.D.C.);

(3) The Industrial Credit and Investment Corporation of India (I.C.I.C.I.);

(4) The Refinance Corporation for Industry Private Ltd. (R.F.C)

The Industrial Finance Corporation (IFC) and its state level counterparts were built up by governmental contribution and were subject to government direction. The National Industrial Development Corporation (NIDC) was started at the beginning of the Second Plan, also with a range of development tasks in the industrial sectors but was eventually utilised primarily for credits to the jute and cotton textile industries for modernization. The Refinance Corporation (RFC) which began operations in 1958, was set up mainly to provide refinancing for the normal commercial banks for medium-term (3-7 years) loans of moderate size; for medium and large size industrial firms for directly productive purposes in accordance with various plans. The Industrial credit and Investment Corporation of India (ICICI) begun as a private institution with governmental and World Bank support, was to provide foreign exchange financing in addition to Rupee finance and it reached operational levels similar to the IFC fairly rapidly. Its operations extended to numerous industries including paper, engineering, sugar, plastics and chemicals, automobiles, cycles, shipping and other miscellaneous industries, in that order of importance.

In addition, the government helped to channel part of the life insurance corporation (nationalised) funds into industrial investment in the private sector. The impact of these institutions on the availability of industrial finance in the country, for private sector's investments was quite considerable.

In the early days of India's development that is during the Second Five Year plan, their financing accounted for a reasonably large share of the total long-term finance

from external sources to privately owned public limited companies in each year (Rosen, 1958). All major recipient industries of this special institutional finance were also major industries within the context of the first two plans. In later years, some of the major institutions which provide institutional finance declined in importance while a number of new institutions gained importance. In 1998-1999, 14 institutions provided financial assistance to industries. The total amount disbursed by these institutions was Rs 593.34 billion. The two major institutions – Industrial Development Bank of India (IDB) and ICICI provided 56.67 per cent of total amount of assistance disbursed. The top six institutions which included the top two and, IFC, State Finance Corporation (SFC), Unit Trust, Life Insurance Corporation of India (LIC) and General Insurance Corporation of India (GIC) provided 84.34 per cent of the total amount of loans disbursed (GOI, 2000). Hence it can be said that the special financial institutions and particularly the top six made major contributions to industrial finance and that without their contribution, the rate of industrial growth in India would have been lower.

Income distribution

The size distribution of income shows the amounts of income received by the rich, poor, and middle class individuals or families and often is interpreted as a direct measure of welfare. The shape of the size distribution depends on the ownership patterns of productive factors and the role each factor plays in the production process. The size distribution of income is inversely related to poverty and poverty is inversely related to human development. If the size distribution becomes more equal, then the share in GDP of the lowest 20 per cent households increases and the shares in GDP of the people in higher quantities decline. Hence the increase in income of the people in the lowest income group contributes to the decline in the level of poverty and many people living below the poverty line move above the line. Hence, with higher income, families can incur greater expenditure on education, health, and so on. This contributes to significant improvement in various human development indicators. The reverse can happen if the income distribution becomes more unequal as a result of which the income and wealth are concentrated in fewer and fewer lands and the poor gets poorer. Thus, for example, ownership of land and capital often is highly concentrated, so anything that enhances the returns to these factors will make the size distribution of income more unequal and therefore, the economic condition of the poor will worsen. This will produce adverse effect on human development indicators. So the question may be asked as to whether the economic growth has made the size distribution of income more even. Table IX illustrates the size distribution income in India. It can be seen from the table that there has been no consistent trend in the reduction in inequality in size distribution of income. The share of the lowest 20 per cent in income increased from 6.7 per cent in 1964-1965 to 8.1 per cent in 1983, but declined to 7.1 in 1984-1985 then increased to 8.8 per cent in 1989-1990 but again declined to 8.5 per cent in 1999 and declined to 8.1 per cent in 1997. The share in income of the highest 20 per cent also fluctuated from year to year. In 1964-1965, the highest 20 per cent received nearly 49 per cent of the national income. Hence, the income distribution was extremely uneven and consequently, the level of poverty was quite pervasive. In 1994, the share in income of the highest 20 per cent declined to 39.3 per cent, the lowest since the income distribution statistics became available in the mid-1960s. But in 1997, the share of the highest 20 per cent increased to 46.1 per cent. The Gini concentration ratio also stood at 37.8. Therefore, the impact of growth on the distribution of income has not been pronounced.

Level of poverty

Together with the overall economic growth, the anti-poverty and employment generation programmes targeted to the poor have helped in the reduction of the incidence of poverty over the long run. The poverty ratio declined from 56.4 per cent in 1973-1974 to 37.3 per cent in 1993-1994 in rural areas and from 49.0 per cent in 1973-1974 to 32.4 per cent in 1993-1994 in urban areas. For the country as a whole, the poverty ratio declined from 54.9 per cent in 1973-1974 to 36 per cent in 1993-1994. These are illustrated in Table X.

Latest estimate of poverty ratio is not available yet as the latest large sample NSS Survey of consumer expenditure on the basis of which poverty ratios are estimated, were completed only in July 2000.

However, even in 1997, 44.2 per cent of the total population were below $US 1.00 per day (World Bank, 2001). Thus, although the reduction in the overall poverty ratio in India from 55 to 36 per cent during a period of two decades is significant, India's performance in poverty reduction has been poor as compared with some of the East Asian countries. The success of China in achieving higher growth and development led to faster decline in poverty ratio in that country. Hence the solution to the problem of poverty reduction lies in the creation of opportunities for broad based economic development and higher growth.

This in turn requires dynamic redistribution of assets in favour of the poor, e.g. improved agricultural land or small shops; greater education to improve literacy skills and access to the modern economy; public provision of basic consumption goods

Year	Lowest 20 per cent	Second quintile	Third quintile	Fourth quintile	Highest 20 per cent	Highest 10 per cent	Gim Index
1964-1965	6.7	10.5	14.3	19.6	48.9	35.2	NA
1983	8.1	12.3	16.3	22.0	41.4	26.7	NA
1984-1985	7.8	11.2	15.0	20.6	45.6	31.3	NA
1989-1990	8.8	12.5	16.2	21.3	41.3	27.1	NA
1992	8.5	12.1	15.8	21.1	42.6	28.4	33.8
1994	9.2	13.0	16.8	21.7	39.3	25.0	29.7
1997	8.1	11.6	15.0	19.3	46.1	33.5	37.8

Source: World Bank (2001)

Table IX. Percentage share of household income by percentile groups of households

Year	Rural sector Number (millions)	Rural sector Poverty ratio (per cent)	Urban sector Number (millions)	Urban sector Poverty ratio (per cent)	Combined all India Number (millions)	Combined all India Poverty ratio (per cent)
1973-1974	261	56.4	60	49.0	321	54.9
1977-1978	264	53.1	65	45.2	329	51.3
1983	252	45.7	71	40.8	323	44.5
1987-1988	232	39.1	75	38.2	307	38.9
1993-1994	244	37.3	76	32.4	320	36.0

Source: Same as Table I

Table X. Number and percentage of population below poverty line

such as food for the poor; intervention in the commodity markets to help poor producers and consumers and development of new technologies to make low income workers more productive.

Although the level of poverty (measured on the basis of poverty line income or expenditure) has declined below 36 per cent in recent years, it is well known that such a measure does not provide a clear picture of the nature and dimension of poverty. There are still millions of people just above the poverty line income or expenditure who are just as poor as those who are below the line. But these people are considered not poor.

In recent years the notion of poverty has been broadened to include vulnerability and exposure to risk – and voicelessness and powerlessness. All these forms of deprivation severely restrict the capabilities that a person has, that is, the substantive freedoms he or she enjoys to lead the life he or she values (Sen, 1999; World Bank, 2001). This dimension of poverty is not reflected in such conventional measure of the level of poverty.

Concluding remarks

Thus in analysing India's economic growth we have examined the major features of India's economic growth and have found that although the growth rate was uneven and low up to 1980, since 1980 it accelerated and slow but steady improvements were recorded in such areas and sectors of the economy as in production and occupational structure; employment in industry; government's tax collection effort; infrastructure and social services; price level; finance; income distribution and level of poverty. However, the rate of progress in poverty reduction has not been as good as one would have wanted. But then one can say that the rate of growth was also not as high as that required to achieve the desired results in poverty reduction. It has been mentioned that in income distribution in earlier years in the 1990s over one third of total income was accruing to the highest 10 per cent of population and only 8 per cent accruing to the lowest 20 per cent of the population. In this situation, to achieve a perceptible decline in poverty the country needs to achieve a very high growth rate consistently over a reasonably long period of time and to implement effectively policies for redistribution of income in favour of the poor. But in India's democratic polity and federal system of government with all their attendant inefficiencies this is unlikely to happen in the foreseeable future. Individual states are more interested in preserving their state rights than in applying uniformly the national policy across the states. Ministers are more interested in preserving their parliamentary seats and ministerial portfolios than in applying appropriate economic policies. Due to political pressure the administrative apparatus fail to implement policies effectively. Uncontrolled freedom has contributed to indiscipline, irresponsibility, non-accountability and corruption at all levels of government and all of these adversely affect the capacity of the economy to perform and to record better results in growth and poverty reduction. It may be that in India we have too much freedom.

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Pre-Soviet, Soviet and post-Soviet models of economic growth and development

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Abstract

Purpose – The purpose of this research paper is a theoretical understanding of the most general trends of Russian economic development during the country's pre-Soviet, Soviet and post-Soviet time frames.

Design/methodology/approach – The objectives are designed in such a way as to include a historical aspect in the research. An attempt is made to grasp (rather cursorily) a logical internal progression in all stages of the Russian development for the last 150 years. In this, the paper shows no need for so-called great historical personalities to explain the great historical events.

Findings – In the course of the work, it was found that Russia had experienced alternatively five different socioeconomic systems of: late mixed feudalism which was on its way to democratic mixed capitalism (the 1850s-October 1917); state feudalism which was pregnant with authoritarian mixed capitalism (1918-1921); authoritarian mixed capitalism in whose womb there was ripening totalitarian state capitalism (1921-1928); totalitarian state capitalism which was carrying within itself the seeds of authoritarian state capitalism (1928-1990); finally, authoritarian state capitalism which was moving toward authoritarian mixed capitalism (1991-present).

Originality/value – The original value of the paper is in its fresh approach to the great events that have been taking place in Russia since the 1850s. The events have been analyzed not as they should be according or despite some theory but as they were and are. The paper, therefore, will be valuable to those who are interested in the socioeconomic development of Russia and who would like, one way or another, to attempt to predict the country's nearest future.

Keywords Economic development, Russia, Bureaucracy

Paper type Research paper

In the twentieth century, Russia found itself living alternately in five different socioeconomic systems (Raiklin, 2001, pp. 75-283):

(1) a Czarist and February Republican Russia of late mixed feudalism[1] which was on its way to democratic mixed capitalism;

(2) a war communist Russia of predominantly state feudalism which was pregnant with authoritarian mixed capitalism;

(3) a New Economic Policy (NEP) Russia of authoritarian mixed capitalism in whose womb there was ripening totalitarian state capitalism;

(4) the Soviet Union of totalitarian state capitalism which was carrying within itself the seeds of authoritarian state capitalism; and

(5) finally, a post-Soviet Russia of authoritarian state capitalism which was moving toward authoritarian mixed capitalism.

The monograph is a revised English version of Raiklin (2001).

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Obviously, a thorough analysis of any of the five socioeconomic forms would need a multi-volume work in the realm of economic history. The author does not aim at writing new pages in this social science. His goal is not an economic *history* but an *economic theory*. More specifically, the task of the monograph is a theoretical comprehension, or modeling, of the most general trends of Russian economic development during the country's pre-Soviet, Soviet, and post-Soviet time frames.

For, in the author's view, the conception of "development" cannot but include in itself a temporal (i.e. historical) aspect. This is because it is impossible to build a theoretical model which in very general terms would adequately reflect a socioeconomic phenomenon, without attempting to understand (even if rather cursorily) the socioeconomic phenomenon which preceded the one under consideration and which created conditions for the origin of the latter. Such an understanding needs no so-called great historical personalities to explain the great historical events.

1. The pre-Soviet model of economic growth and development

Our analysis of the pre-Soviet model of economic growth and development will cover the second half of the nineteenth and the beginning of the twentieth centuries. This will include a period of the Russian empire (the 1850s-March 1917) and that of the Russian parliamentary republic (March-November 1917).

1.1 Russia prior to the Crimean war (before 1854)

Before the abolition of serfdom, the socioeconomic relations which dominated the Russian empire in the middle of the nineteenth century were those of *feudalism*. Russia was the only major European power where such a system existed.

This socioeconomic structure was *feudalism* because the principal means of production of the period (land) were owned not by those who tilled it (the peasantry) but by those who enjoyed the fruits of the peasants' labor (the feudal class) thanks to an economy based on serfdom[2].

The serf system meant that the Russian peasant was attached to the land of his feudal owner. The Russian serf, for the right to work a piece of land "given" to him by his land owner and which the peasant needed to procure the means of his own subsistence from, had to spend a certain period of time producing a surplus product for his land master. Depending on the country's region, there were two ways the surplus product was produced.

One way was called *barshchina* (the corvee system). It was common in areas where the land was more fertile and where therefore the peasant worked, without pay, several days a week on a plot that remained in the hands of the land owner.

The other way was called *obrok* (the quitrent system). This method was used in regions where the land was less fertile. Under this system, the surplus product took either a natural (physical) form of metayage (the peasant produced agricultural products for his landowner, free of charge) or the surplus product took a monetary form (quitrent per se) where the serf periodically gave his landowner a certain amount of money. The serf procured the money for the feudal master either by selling a portion of the agricultural product produced by the serf or by the serf being employed somewhere during the off-season period.

Russian feudalism was *mixed* feudalism, for it was a combination of individual, corporate (the Russian orthodox church), and state forms of landownership based on

the labor of serfs. If we disregard free peasants in the Baltic region, Finland, Poland, and Siberia, then it can be said that by 1850 around half of Russia's serfs had belonged to individual feudal families (*pomeshchiki*, the gentry). Among them, the Czarist family was a major individual feudal holder of land and peasants.

The second half of the Russian unfree peasantry was owned by the Russian state (in a sense a corporation of the Russian bureaucracy) and the Russian orthodox church (in a sense a corporation of the orthodox church bureaucracy) (Raiklin, 2001, pp. 76-7).

A characteristic feature of the period was the existence of the *mir* (the peasant village commune). Its role in the life of Russian peasants can hardly be exaggerated for two reasons.

First, those pieces of land that feudal lords of various forms (individual, corporate, and state) assigned to the peasants for cultivation were in the actual possession of the village commune, not the individual peasant families. Second, the internal and external affairs of the *mir* were the domain of the village elders who periodically redistributed parcels among members of the village commune (individual peasant families).

From this, the following can be inferred. First, the *mir*, in the person of its elders, played the role of a village self-government. Second, the *mir* performed the function of an intermediary between the landowners and individual peasant families. As a result, the village commune was one of the basic pillars of feudalism in Russian society.

Besides agricultural feudalism as a principal socioeconomic relation, before 1861 in Russia there were also elements of non-agrarian merchant and manufacturing feudalism. Although commerce and manufacturing were the basic realms of their activities, they, nevertheless, might be characterized as feudalism because they were based on an exploitation not of free hired labor but that of Russian serfs.

At the same time, one should not overlook some contours of the emerging free urban population: artisans, small traders, usurers, etc. But the significance of rising lower middle classes at this particular period of Russia's development should not be exaggerated: in the middle of the nineteenth century, of 36 million people residing in the Russian empire only about 5 million people were free city dwellers. This constituted around 14 percent of the entire population of the country (Heyman, 1993, p. 187).

It is important to emphasize the dependence of everybody and everything on the state bureaucracy during this time. The will of the bureaucracy, beginning with the bureaucrat of highest rank, the Russian Czar, was applied to the serf peasantry which supplied the Russian military with soldiers, to the feudal lord (*pomeshchik*) who out of fear that his land and his peasants be taken away by the Russian government was obliged to a certain compulsory service for the state and the Czar, to the artisan and merchant who paid taxes to the state treasury and to the church which from the time of Peter the Great had been an integral part of the government mechanism, and so on.

In terms of industrial production, in 1860, among the eleven major economic powers, the Russian economy occupied ninth-tenth place which Russia shared with Italy. Below Russia was Japan (at eleventh place) and above were Spain (eighth place), Sweden (seventh place), Germany (sixth place), France (fifth place), Switzerland (fourth place), the USA and Belgium (second-third place), and finally Great Britain (first place) (Nove, 1982, p. 15 ; Raiklin, 2001, pp. 78-9).

1.2 The Crimean War (1854-1856) and the necessity of reforms

Such was the socioeconomic structure of Russia before the Crimean war of 1854-1856. The war, which Russia waged against Great Britain, France, and the Ottoman empire and which Russia lost, revealed a complete bankruptcy of this feudal system of serf labor, on the one hand, and a complete supremacy of British and French capitalism based on free labor, on the other.

The military defeat forced the Russian ruling feudal-bureaucratic class to admit the necessity of deep socioeconomic and political reforms. The result was a promulgation of Czarist edicts, the most significant of which was that of 1861, which lead to the abolition of serfdom. This was due to the fact that the serf labor system had become ineffective in maintaining the old feudal order as well as in preserving Russia's very empire.

There were several reasons for this. First, obliged to periodically redistribute their plots within the village commune, the peasants had no incentive to maintain the land's fertility, to say nothing of its improvement. Second, the system of *barshchina*, according to which the serf had to produce free of charge the surplus product for his feudal lord on the latter's land, provided no stimulus for productive labor. Third, labor inefficiency caused a grievous state for many peasant families who channeled their anger into uprisings that were becoming more and more frequent. Fourth, the low efficiency of serf labor, insufficient capital to modernize agricultural production, and competition from less expensive American grain exports in European markets – all of which were undermining the material well-being of many members of the landowning class. As a consequence, the economic conditions of the gentry were becoming more and more dependent on incomes its members were receiving serving the state as military officers and government bureaucrats. Fifth and finally were the illiteracy and poor health of the children of serfs who were drafted as soldiers into the Russian military for a period of 25 years and the extreme backwardness of the Russian military industry based on serf labor – these factors were increasingly weakening the military might of the country and threatening the very foundation of the Russian empire.

1.3 The Abolition of Serfdom (1861) and its consequences

Since the peasantry comprised the vast majority of the Russian population, the abolition of serfdom was equivalent to freeing the entire population of the empire. The emergence of free labor as one of the most important factors of production opened the way to transforming Russian feudalism into capitalism.

But the road was very bumpy. The same circumstances that caused the abolition of serfdom, created obstacles to the movement along the road from feudalism to capitalism.

The most significant hindrance was the preservation of a feudal-serf institution like the village commune. Thanks to its continuing existence, the feudal-bureaucratic state, as before, was able to hold under its control the peasant population.

For, in the end, the main task of the Czarist regime in repealing serfdom was not the country's economic development (though such an outcome was dictated by the realities of the second half of the twentieth century). The principal goal was to save Czarism itself from peasant uprisings threatening the very existence of the Russian monarchy.

Moreover, the problem of peasants's labor inefficiency did not go away despite formal freedom granted peasants by the government. This problem was conditioned by several peculiarities of land distribution among peasant families.

First, former serfs received only half of feudal land and this was not of very good quality. Such a quantitative and qualitative land starvation brought about discontent among peasants. Their dissatisfaction was directed against individual, Czarist, church, and state ownership of land.

Second, the Russian peasant was given parcels of land of individual landowners not for free but by means of land redemption. The latter was tantamount to an additional tax on a peasant household.

The mechanism for redemption consisted in the following measures. The government bought the gentry's land and gave it to the peasants. The latter had 49 years to repay the amount the government paid the gentry. The size of redemption which an individual peasant household had to pay depended on the number of people in the household. The amount which was more or less acceptable to the gentry class was utterly unacceptable to the peasant class[3]. Furthermore, the peasantry vigorously objected to the very idea of land redemption believing that land was given by God to those who till it.

Third, in many cases it was the village commune and not an individual peasant family who received land. And it was the *mir* which was responsible for paying the amount of redemption of individual peasant households. If poorer peasant households were unable to pay their debts, it was the responsibility of more prosperous peasants to fill the gap. It is obvious that in such cases the peasants' disincentive to accumulate capital had to significantly increase.

Fourth, the per capita character of redemption payments did not allow formally free individual peasant families to leave the village commune and work in the cities. Otherwise, the diminishing numbers within the peasant family had to pay the redemption fees.

Fifth, no peasant household was allowed to privatize its plot and leave the *mir* until all the redemption payments had been made by the household.

Sixth, as in the pre-reform period, plots were allotted to individual peasant families only for a certain time. This was because village land had to be periodically divided among individual households of the *mir*. Thus, as earlier, the incentive to invest capital to uphold or improve land quality suffered.

However, despite the many negative features of the liberation of peasants, there were positive aspects. In the final analysis, the abolition of serfdom led to the disintegration of the archaic peasant commune, the pillar of the feudal-serf system, and to a further undermining of feudalism whose backward forced methods of economic management could not satisfy the country's needs in grain, material and labor resources. Hence, despite all these obstacles, Russia opened the path to capitalism (Raiklin, 2001, pp. 79-80).

1.4 The Beginning of Industrialization (1864) and the role of the state

Obviously the Czarist regime had no desire to commit suicide by completely loosening the feudal-bureaucratic system. On the contrary, it was in the interests of a significant part of the Russian nobility to strengthen the system[4].

Nevertheless, the nobility's class interests demanded a consolidation of the economic foundation of the existing socioeconomic structure. Under the conditions of the second half of the nineteenth century, of rapid development of world capitalism and especially after the abolition of serfdom (despite its admittedly limited and partial character), Russian economic growth and development could be achieved only by applying capitalist methods in administering the economy with the purpose of restructuring a predominantly agricultural country into a predominantly industrial one.

In the second half of the nineteenth century, one such method towards this was the construction of railroads. For many countries of the world, railroad building became a catalyst which, through the multiplier process, favored the emergence of new industrial sectors.

Russia was no exception. Already in 1851 a railroad line connecting the two capitals, Moscow and St Petersburg, was built. However, in 1861, the length of Russian railroads in comparison to its population and its territory was the smallest among the major economic powers of that time, except Japan (Nove, 1982, p. 15).

But with the help of the Russian government (which provided private railroad construction companies with subsidies, low-interest credits, and inexpensive state insurance), the length of Russian railroad lines in 1861-1913 grew at a rate exceeding that of all other major industrial countries of the world, except Norway. Moreover, in 1913, the length of Russian railroads was the largest in the world, except the USA (Gregory and Stuart, 1994, pp. 18-9).

Railroad construction stimulated the production of cast iron, crude steel, coal, raw cotton, etc. As a result, for more than fifty years, Russia had achieved considerable progress in the production of principal items typical for the period of industrial revolution. Due to the very high rates of production of these items in comparison with other major industrial countries, in 1913 Russia was able to significantly reduce the gap between itself and the latter. Russia was even in a position to exceed the level of production in some of these items compared with some developed nations (Gregory and Stuart, 1994).

But Russian agriculture was growing at a much lower rate than its industry, though at a higher rate than the agricultural sectors of many developed countries of that time (Gregory and Stuart, 1994). This, of course, was reducing the rate of growth of the Russian economy as a whole.

Nevertheless, since the overall rate of economic growth in Russia was greater than in many other major industrial countries, in 1913 as compared to 1861, Russia not only achieved great economic success but also in terms of some overall economic indices had to be recognized as one of the world's major economic players. Thus, in 1913, Russia's national income was only behind that of the United States, Germany, and Great Britain (Gregory and Stuart, 1994). In 1913, Russia became the world's fourth largest economic power.

But if one measures a country's economic might not in total but in per capita terms, then in this respect in 1913, just prior to World War I (WWI), Russia remained a backward country unable to realize the vast possibilities of its enormous resources, territory, and population. In 1913, despite its rapid economic growth, in terms of per capita national income Russia was behind every major economic power of that period due to an even more rapid increase in its population. To illustrate, Russian per capita

income was lower than that of: Austro-Hungary by 1.6 times, Spain by 1.7 times, Italy by 2.2 times, France by 2.5 times, Sweden by 2.9 times, Germany and Netherlands by 3.1 times, Great Britain by 4.9 times, Norway by 5.5 times, and, finally, the USA by 8.7 times (Gregory and Stuart, 1994).

One of the major reasons for this lag, as was mentioned earlier, was the state of Russian agriculture. It remained backward, patriarchal, and communal. It was unable to keep pace with industrial development and satisfy industry's need for labor, raw materials, and foodstuffs.

Furthermore, Russian peasants who were dissatisfied with the conditions of their liberation from serfdom very often revolted against their former landowners. This further aggravated the agricultural sector's lagging behind industrial production and created additional problems for the latter's development.

As a result, these realities of the twentieth century urged on a part of the feudal-bureaucratic leadership to embark on new reforms in agriculture to demolish the old patriarchal, communal and landlord structure and increase the number of individual farmers in Russian villages. The goal was to create a class of farmers who could further peasant support for Czarism.

These necessary reforms began in earnest in 1903 when the village commune's responsibility for paying redemption fees owed by each peasant household to the government was abolished (Gregory and Stuart, 1994, p. 21). Such a measure allowed some peasant households to pay off their share of redemption fees and after that freely, without paying attention to the attitude of other members of the village commune, decide for themselves whether they wanted to remain in the *mir* or not.

In 1906-1907, the Russian government wrote off the entire peasants' debt (Gregory and Stuart, 1994). Peasant households which were able now to use the released monetary funds as they wished, could improve their economic conditions which, in turn, reduced the level of their protests against the gentry regime.

Finally, Stolypin's reforms[5] permitted some peasants (usually more prosperous ones) to leave the *mir* with that plot which peasants tilled while they remained in the village commune. When World War I began, about 2 million peasant families left village communes in order to become Western-type individual farmers (Nove, 1989, p. 16).

These socioeconomic reforms were accompanied by political reforms: the Russian political system, not always consistently and not without temporary steps backwards, was gradually being transformed from an authoritarian Czarist regime toward a constitutional monarchy. For, the abolition of serfdom demanded new organs of power which could substitute for those administrative and juridical functions which had been a prerogative of the local gentry.

Under these circumstances, in 1864 there emerged the *zemstvo* (an elective district council) as a local self-government institution. Despite the fact that the mechanism of election to this institution was arranged in such a way that it patronized the gentry first and foremost, that the *zemstvo* was greatly curtailed in its right to collect taxes and that its activities were under the constant control of the police and government bureaucrats, this institution represented a great step forward in the political life of the country. Guaranteeing financial support for the construction of schools and hospitals in rural areas, the *zemstvo* was laying the groundwork for local initiative and thus for the formation of civil society in the country.

The emerging bourgeoisie class was becoming economically significant to such a degree that it began insisting on a certain redistribution of political power in its own favor. At the same time, the working class, coming into being with the class of bourgeoisie, began its struggle for political safeguards for such socioeconomic conditions of existence as the 8-hour working day, paid vacations and overtime, the right to strike, and so on.

Czarism, weakened morally and militarily in 1904-1905 by its unsuccessful war against Japan and then by the 1905 revolution which followed the war, finally had to make one more political concession, but this time in the direction of some decentralization of its political power over Russian society. In 1905, Russia, for the first time in its imperial history, was given a constitution, thus in some ways limiting government power that was hitherto unrestricted. The constitution provided the legal right to organize political parties. In 1906, the *Duma* (state assembly) was convened and began to germinate parliamentary power.

Thus, under the conditions of the abolishment of serfdom, the beginning of industrialization and the emergence of the bourgeoisie and the working class, a slow and gradual transformation of the Russian political system into a constitutional monarchy was charting a course for the conversion of the Russian socioeconomic system into democratic mixed capitalism (a mixed state-private economy and political pluralism) (Raiklin, 2001, p. 85).

But the transformation to a new society was complicated by two serious factors as compared to more developed countries: *first*, too much involvement by the Russian state in economic affairs which bred corruption among both the Czarist bureaucracy and the fledgling urban and rural bourgeoisie and *second*, considerable control by foreigners over the Russian economy. These two points need to be further elaborated.

Let us start with corruption. The railroad construction and the sectors of industrial production needed for its development brought to life a class of Russian entrepreneurs "recruited" from the bureaucracy, the gentry, and religious minorities, such as Jews[6] and Old Believers[7].

These private business undertakings by individuals not associated with physical labor but instead directed towards arbitraging the unbalances in deficits and surpluses periodically appearing in the economy, caused hostility and irritation in a predominantly peasant society, i.e. in a country where the vast majority of people belonged to the Russian orthodox church and were engaged in hard physical labor. Many from this large majority of ordinary people looked at the activities of those whom they considered outsiders as being speculative and parasitical in nature. The same attitude to the emerging class of bourgeoisie was displayed by that part of the gentry which was unable or did not want to adopt capitalist methods of economic administering.

This situation of hostility to free entrepreneurship could not but affect the position of the bureaucratic-feudal rulers. They too were annoyed that in a country where traditionally a great many activities had to be approved by the authorities, there appeared people, mostly either non-Russians or religious apostates, who wanted to take initiative in their own hands.

From all of this follows that the emerging Russian bourgeoisie was dependent on government bureaucrats for its well-being. The very opening of private business

required permission from the government hierarchy: from the Czar himself if it was a corporation and in other cases, from a bureaucrat of either regional or local level.

It is natural that under these conditions an ancient Russian practice continued to hold prevalence: who was given permission to conduct what kind of business and when one could expect to receive a subsidy, low-interest credit or state supported and/or guaranteed insurance, all of these depended on the proximity of the potential investor to a bureaucrat responsible for the decisions and the amount of graft provided to the latter.

But the traditional necessity to bribe government officials did not deter people who wanted to open their own business. For, in a country, fantastically rich in its potential but relatively backward in its actuality, there existed enormous possibilities for receiving unbelievably high profits (as compared to the world's more developed countries). In other words, potential capitalists were able to afford bribes as part of their business expenditures because a young and growing Russian market was providing great opportunities for abnormally high rates of return on their investment.

But by corrupting both government officials and the bourgeois and thus, in the final analysis creating a monopoly position for some economic agents who were lucky enough to be close enough to the "right" person, bribes prevented "honest" competition. This resulted in high monopoly prices, low monopoly production and high monopoly profits.

Let us conclude now with the foreign influence. By pursuing its objectives of preferential credit and insurance policies for railroad construction and for the creation and extension of the country's industrial base, the Czarist government desperately needed financial resources.

The most important source of such necessary resources was high taxes applied to the Russian peasantry. By reducing peasants' consumption of agricultural products, the measure allowed the government to sell this "saved" part of agricultural produce to foreign consumers for foreign currency.

But despite very heavy taxation of peasants, this type of government revenue was not sufficient due to the backwardness of Russian agriculture. Therefore, a second source of revenue to government coffers was found: foreign loans and investment.

According to some estimates (Nove, 1982, pp. 18-9), private (non-government) foreign capital (namely British, French, German, and Belgian) invested in the Russian economy in 1913 accounted for around 33 percent of the entire amount of private capital in the country. These firms, the owners of which were foreigners, were functioning in various branches of the Russian economy.

Among these branches, in first place were the oil and banking industries. Here foreign ownership was predominant.

The ranking of other industries in terms of foreign participation was as follows: chemical (50 percent), metals (42 percent), woodworking (37 percent), textiles (28 percent), etc. Now, if in addition to private capital, loans by foreign governments to the Russian government are taken into consideration, it can be concluded that before WWI Russia was a debtor-country. That is, in the country as a whole, the amount of foreign capital comprised 40 percent of industrial investments, and from 15 to 20 percent of total investments (Gregory and Stuart, 1994, p. 30).

The growing financial-economic dependence of Russia on the world's more advanced countries of the time was threatening to develop into her political dependence.

1.5 WWI (1914-1918) and the Provisional Government (March-November 1917)

Be that as it may, in the beginning of the twentieth century, Russia was moving in the same direction as many advanced countries of the world: to *democratic mixed capitalism*. The latter can be characterized as:

> . . . a social formation in which all forms of the capitalist mode of production (state, corporate, individual and family) are present actually as well as legally and which combines a multiparty (both legally and actually) political system and indicative planning (primarily at the macroeconomic level) (Raiklin, 1988, p. 7).

It seemed that Russia's movement toward democratic mixed capitalism was irreversible. It seemed that, in time, precisely this new, more progressive form of capitalism would once and for all tear away the socioeconomic and political remnants of Russian feudalism.

That this had not materialized was due to WWI

> . . . the war first greatly weakened the monarchy and finally, washed it away from the Russian scene. The political vacuum created by the fall of the monarchy was quickly filled by the Provisional Government, which for a short historical moment (February-October 1917) was brought to the surface by the flood of these events (Raiklin, 1991a, p. 110).

But under the conditions of continuing war, the fate of the Provisional Government and the February Republic which created it was sealed as well. Some of the major reasons for this can be summarized as follows (Raiklin, 1991a, p. 112):

> It had to legalize all political parties formally, because their actual existence within the vacuum of political power brought about by the destruction of monarchy and expressed in the duality of power[8] left the government no other avenue. It had to abrogate all restrictions based on social and class status, because the old feudal order was compromised by the deeds of the monarchy during the war and by the hostility of peasants towards the landed nobility. It had to abolish all limitations of a national nature, because . . . the . . . intensified national movement towards national equity and self-determination left it no other choice but to attempt to appease national minorities.
>
> It had to continue the war, because it was "a real gold-mine for industrialists and financiers" (Raiklin, 1991a, p. 126, note 53) protected by the government machinery; because of "the dependence of the Russian war economy in entirety on foreign capital and on government bodies of the allied countries" (Raiklin, 1991a); because of the general mood in the country not against peace but against a *separate* peace with Germany and Austria; and, finally, because the Provisional Government, had it decided to conclude a separate peace, would not have been able to accomplish this since the duality of power did not allow it to speak for Russia in one voice (Raiklin, 1991a, note 54).
>
> And so long as it was forced to continue the war, the Provisional Government could not have solved the ancient Russian problem of land. Since "Russia's was a peasant army" (Raiklin, 1991a, note 55), to introduce an agrarian reform intended to redistribute the gentry's land to peasants was tantamount to dissolving the army. This is because no force in the world would have been able to prevent the peasant-soldiers from deserting the army and heading home to get their piece of land.
>
> By doing what it had to do and by not doing what it could not do, the Provisional Government . . . was creating conditions for the destruction of its power. For, the socio-political measures taken by the government were leading to its increasing inability to hold out on the surface of the furious and stormy waters and ultimately to anarchy. This was hardly a surprising

> outcome for a [predominantly peasant and illiterate] country not ready for political democracy with its requirements of strong and orderly discipline and of the assurance in the morrow.
>
> Under the circumstances, the Provisional Government was doomed. The internal logic of events with iron necessity was leaving the door open for a new political force to enter the center of the Russian historical scene.

This force was the Bolshevik party which came to power in November 1917, whose "dictatorship . . . put an end to the process of final dissolution and the triumph of chaos and anarchy" (Raiklin, 1991a, p. 129, note 69) and embarked on the construction of the Soviet model of economic growth and development.

From the temporal point of view, the Soviet model of economic growth and development included *War Communism* (1918-1921) as the first Soviet model of economic growth and development; *the New Economic Policy* (1921-1928) which followed the *War Communism* model; and, finally, the *Stalinist model* (1928-1990) as the last Soviet model of economic growth and development.

2. The first Soviet model of economic growth and development: War Communism (1918-1921)

Between October 1917 and July 1918, the Bolsheviks who took political power in the country were forced to accommodate themselves to the socioeconomic conditions of the war period rather than change these conditions in accordance with the Bolshevik program of building socialism.

In agriculture, they nationalized land and permitted its distribution and redistribution among the peasants. This Bolshevist act was none other than a legalization of the process of land seizure by the peasants under the conditions of first, dual power and second, the transfer of power to the Bolsheviks.

During this period, the actual institution which, without preliminary permission, was taking away land from the landed gentry and distributing and redistributing it among the peasants was the village commune (already familiar to us). As in the past, when the *mir* was standing between the feudal lord and the government, on the one hand, and the peasant, on the other, now the village commune was mediating affairs between a new Soviet government and peasant households.

Since Russia was still engaged in WWI, the Bolsheviks nationalized the most important (from a military point of view) industrial enterprises and also banking, grain purchases and storage, transportation, and oil production. In order to preclude the reduction of production necessary for war supplies and population provision, enterprises from the rest of the economy either retained their private (non-government) ownership or were administered jointly by their owners and management appointed by Soviet power, or, lastly, they fell under the control of rapidly organized trade unions.

This socioeconomic structure can be defined as predominantly *authoritarian* (one-party political system), *mixed* (various forms of state and not-state property of the means of production), *capitalism* (the system of wage labor in industry and trade) in cities and as predominantly *simple* (the absence of wage labor, self-employment by peasants with the help of their own means of production) *commodity production* (that is, production for the market) in villages.

Thus, the Bolshevik authorities made the first, although not deliberate step in the direction of the Stalinist system of *totalitarian* (from a democratic to an authoritarian form in the political sphere), *state* (by means of increasing the share of state property in mixed economy), and *capitalism* (wage labor remained the basic relation in industry and trade)[9].

2.1 The essence of War Communism

In the middle of 1918, the situation in the country was aggravated by the civil war between the Bolshevik Red Army and the anti-Bolshevik White Army. The chaos and lawlessness created by the civil war greatly undermined market relations between the industrial city and the agricultural village. Moreover, the breakup of commercial ties between the city and the village was further exacerbated by the unchecked printing of money by the Bolshevik regime, still very weak at the time but in desperate need of financial resources for waging war against its foreign (the German army) and domestic (the White Army) enemies.

A famine was about to take place in cities and towns. This was due to a growing inability by the peasants to supply agricultural products due to the civil war and their unwillingness to supply agricultural products for rapidly depreciating rubles (peasants' purchasing power to buy industrial products was rapidly declining). Thus, the growing possibility of starvation began threatening the very existence of the Soviet regime.

That is why the Soviet regime was compelled to introduce War Communism. The essence of its policies were as follows.

First, expropriation of a part (surplus) of agricultural produce. The bearers of the *prodrazverstka* (as this policy came to be known) were representatives of two major classes in the country. These were the working detachments that Bolshevik authorities sent from cities to villages in order to requisition foodstuffs for starving industrial workers and soldiers. Also, these were poor peasants hateful and envious of their more prosperous and successful neighbors[10].

Second, the nationalization of the economy as a whole. For instance, by the Fall of 1920, thirty seven thousand enterprises (half of them very small and with no machine equipment) had been nationalized (Nove, 1982, pp. 69-70). There were two basic groups of reasons why the government wanted to nationalize the private sector.

The first group of causes had a practical character. It reflected a situation of a stage of siege in which the Bolsheviks found themselves as a result of WWI and the Civil War. For this reason, the following enterprises were nationalized:

(1) those whose owners joined the White Army to fight against the Bolsheviks;

(2) those which belonged to the Germans; and

(3) those whose workers were taking vengeance on their former owners for past wrongs by seizing enterprises; and so on.

It can be concluded that this purely practical necessity for nationalization had nothing to do with building socialism in the country (a professed goal of the Bolsheviks). Here there was no ideological reason for Bolshevik actions.

But the second group of causes for industry nationalization was purely ideological in nature. The ideological factor determined the *degree* of nationalization, as for

instance when the government was taking in its hands enterprises even with only one employee.

Third, the prohibition of domestic (non-state) private trade. Although the Bolsheviks proclaimed this measure as a first step toward the elimination of commodity (market relations) production and the construction of socialism, nevertheless the measure was also a forced reaction to the realities of the day, such as hyperinflation (due to continuous money printing). For example, if on 1 November 1917 there were 20 billion rubles in circulation, by 1 July 1921 money in circulation had grown to 2.5 trillion rubles. Moreover, by the Spring of 1919, the printing press was not keeping pace with printing the necessary quantity of money (Gregory and Stuart, 1994, p. 47). As a result, the government had become the only distributor of food as well as non-food items to the population[11].

Fourth, the semi-military methods of mobilization of the work force. Work became a universal duty. Each worker found himself attached to a particular enterprise. Here the worker received a food ration. In addition, the worker was not allowed on his own to switch from that enterprise to another. A worker could change the place of his employment only under the orders of a corresponding Bolshevik power body and only subject to mobilization needs.

It can be concluded that the socioeconomic relations of War Communism in both legal sectors of the economy (urban and rural) were those of *state feudalism*. It must be pointed out that War Communism, denying the model of democratic mixed capitalism and thus actually confirming a state role in the Czarist model of mixed feudalism, nevertheless represented a second step in the movement toward the Stalinist model of totalitarian (an attempt by the government to control all aspects of the activities of Soviet society) state capitalism.

But before stepping on the path of totalitarian state capitalism, Soviet Russia had to pass along the road of authoritarian mixed capitalism, or NEP.

2.2 The consequences of WWI and War Communism

WWI came to an end in 1918. Germany and its allies were defeated by Great Britain, France and Russia. The Civil War in Russia ended at the end of 1920, with the Bolshevik regime defeating the White Army.

Some statistical data below shows the socioeconomic cost Russia had to pay for this dual victory. For the period from 1914 to 1920, the population of Russia decreased by 1.655 million, or 1.8 percent. The structure of the population had changed: the urban population fell by 3.0 percent while the rural population increased by the same percentage (Goskomstat Rossii, 1998, p. 32, table 1).

These statistics illustrate that by the end of War Communism, Russia had become more rural than before its entrance into WWI due to a migration of starving urban dwellers to rural areas.

The Russian economy had been devastated as well. In 1920, Russia's industrial production was at 20 percent, transportation at 22 percent, and agricultural production at two-thirds of its 1913, or pre-war level. Exports and imports, for all practical terms, ceased to exist: the country had nothing to offer and had no currency to purchase on world markets (Gregory and Stuart, 1994, p. 54).

3. The second Soviet model of economic growth and development: New Economic Policy (1921-1928)

There were three major reasons the Bolshevik regime could withstand and win the civil war.

First, the support it received from the great bulk of the Russian peasantry. The peasants feared that with the return of the old regime they would lose their land. It goes without saying that the Russian peasant did not like the policy of *prodrazverstka*. But during War Communism he reconciled himself to this policy of requisitions as something temporary, as necessary in order to not allow any restoration of the gentry's landownership.

Second, the support of a significant part of the urban working class. The Russian worker was afraid that if the Bolsheviks lost their power and former enterprise owners returned, then workers' control over enterprises would be annulled and the owners would engage in policies of lockouts to suppress worker demands.

Obviously, workers opposed Bolshevik policies of semi-military mobilization. But, like peasants with regard to *prodrazverstka*, workers tolerated this policy as a temporary measure caused by WWI and the Civil War.

Third, the support the Bolsheviks received from a certain part of residents in non-Russian regions of the country. The Bolsheviks promised to non-Russians (Ukrainians, Georgians, Armenians, etc.) the right of self-determination, right up to separation from Russia and the formation of their own independent states. This portion of the non-Russian population was inclined to side with the Red Army for a simple reason: although the White Army had within its ranks many adherents with very often diametrically opposite views regarding the national question, nevertheless the most prevailing view was that of the inadmissibility of the national disintegration of Russia.

But now, with WWI ended and the White Army crushed, when there was no longer any internal threat to restore the old regime – under these circumstances Russian peasants and workers wanted to change their relationship with the Bolshevik authorities. The peasants desired to enjoy the fruits of their own labor on a piece of land which was actually theirs, to be in charge of their produce and not be subject to forced requisitions of agricultural "surpluses". The peasants backed their demands by uprisings against the existing power (Heyman, 1993, p. 315).

The workers no longer were content with semi-military discipline in the enterprise, with beggarly, ration-type payments in kind. Believing that Soviet power was their power, Russian workers demanded to be represented in the factory administration where they expected they would defend their own interests and not that of the Bolshevik authorities.

Resentment by many Russians to the continuation of the policies of War Communism found its highest expression in an armed revolt at the military-naval base in Kronstadt, near St Petersburg. These were military seamen who up to that time had been a major bulwark for the Bolsheviks and who now rose in rebellion against the existing powers. Many of the sailors who took part in the rebellion were former peasants. They just had come from furloughs which they spent in their villages and where they saw firsthand the devastation which the policies of War Communism had brought to peasant life (Heyman, 1993).

Thus, the Bolshevik regime now had to confront its own, mostly hostile, peasant, illiterate, and naive people, with their peasant conceptions of justice, equality, and brotherhood.

3.1 The Necessity of NEP

No power falls until it is pushed to fall. And any power will do all it can in order to remain in power. This truism is fully applicable to the behavior of the Bolshevik regime, despite its "socialist-communist" rhetoric. Similar to the time of War Communism, the Bolsheviks had to retreat, at least temporarily, before the "petty-bourgeois" (as the regime defined it) feelings of a sizable portion of the peasantry. Under these circumstances, in March 1921, the Bolsheviks proclaimed the *NEP* to replace War Communism.

3.2 NEP and agriculture

In terms of agriculture, the most significant aspect of NEP was the replacement of *prodrazverstka* by the *tax in kind* (*prodnalog*) system which took its place in 1921. As it was desired by peasants, the tax was predetermined, and not arbitrarily set, and was much smaller than the *prodrazverstka* (Nove, 1982, p. 84; Gregory and Stuart, 1994, p. 56).

3.3 NEP and domestic trade

As for domestic trade, in order for the peasants to be able to trade their agricultural surpluses left over after paying *prodnalog* and after meeting their own production and consumption needs, it was necessary for Bolshevik authorities to permit legal free trade (an illegal form of domestic trade existed, despite threats of confiscation and execution). Therefore, the second major feature of NEP was legal commodity (market) relations between the city and village, which the Bolsheviks were forced to restore.

3.4 NEP and industrial production

Regarding industrial production, the restoration of legal free trade of agricultural products was not only quieting the peasants, but was also solving the problem of a deficit in foodstuffs in the country. This, however, could not solve the problem of a deficit in consumer non-food products needed by both peasants and the rest of the population. For, state enterprises, which were producing and selling non-food products, were monopolists and hence, very ineffective in this respect.

Again, the Bolsheviks solved the deficit problem not the way they wanted to but, as before, as was dictated by the real circumstances which faced the country. The problem was solved by three measures.

With regards to state non-agricultural (industrial) enterprises, the government went in two directions. The first was to preserve the centralization of the so-called commanding heights of the economy: banking, the most important branches of heavy and military production, transportation and foreign trade, in other words, those branches of the Soviet economy which the government considered vital to its own survival. The finances of enterprises in such branches of the economy remained part of the state budget and decisions to supply these enterprises with economic resources and to sell their produce had to be made by central authorities. In essence, this was the third major element of NEP.

The decentralization of state industrial enterprises for the rest of industry was the second way of solving the problem. These enterprises were granted the right to be financially independent from the state budget, find for themselves their own suppliers of factors of production and customers for their finished products, strive to maximize profits and retain part of them for their own needs, and organize trusts or associations of enterprises within the same branch of industry but still with some controls by government officials. This was the fourth basic characteristic of NEP.

Its fifth feature consisted in the third measure, denationalization, with respect to small-size state industrial enterprises of up to 20 employees.

As a result, the sixth aspect of NEP lies in the fact that decentralized and denationalized non-agricultural enterprises were allowed to conduct consumer free trade: both retail and wholesale. Thus, by linking town and country, the problem of supplying peasants with non-food products was resolved.

But once begun, non-state private retail trade between town and country soon spread to other sectors of the economy and at the wholesale level as well. It can be concluded, therefore, that free trade and free money circulation within the country as a whole and between all the sectors of the economy marked the seventh significant feature of NEP (Gregory and Stuart, 1994, pp. 56-7).

3.5 NEP as authoritarian mixed capitalism

From the beginning, NEP was labeled as *authoritarian mixed capitalism*. Having presented the basic elements of the NEP, we are now in a position to elaborate on this definition.

3.6 NEP as a mixed economy

Why do we consider the period of 1921-1928 as a period of *mixed* economy? There are three major reasons for this. First, the predominant forms of economic activity in agriculture were non-state individual activities (Nove, 1982, pp. 105-6). And during NEP agriculture remained the most important branch of the national economy (Gregory and Stuart, 1994, p. 88, table 4.1).

Second, in 1926-1927, the non-state private sector produced 77.5 percent of the entire production of industrial enterprises in the small-scale and handicraft industries (Nove, 1982, p. 104).

Third, in 1924-1925, 98.2 percent of large-scale industrial enterprises were state-owned (Nove, 1982).

3.7 NEP and the capitalist direction of its development

From a historical point of view, the NEP existed for a very short time. Nevertheless, it is possible to draw certain conclusions about the *capitalist* direction of its development[12].

In terms of agriculture, here the direction was expressed as a tendency. In the non-state sector of the economy, this was manifested as some growth in the kulaks, i.e. of the class of well-to-do peasant households which were using hired labor and/or leased their land[13]. In the state sector of the economy this was expressed with the appearance and growth of state agricultural farms (*sovkhozy*), the fundamental features of which was the exploitation of hired labor, and cooperative agricultural farms

(*kolkhozy*), whose nature was that of *state feudalism*[14]. In time, in particular during the last years of NEP, state capitalism (state agricultural farms) and state feudalism (cooperative agricultural farms) were replacing non-state capitalism (kulak farms).

In terms of industry and commerce, cottage-handicraft production chiefly remained non-capitalist, since, as a rule, it did not use wage labor. But industry and commerce were dominated by non-state and state capitalist enterprises.

It must be emphasized that over time, like in the case of agriculture, a state capitalist way of development was becoming prevalent not only in industry but in trade as well. Thus, in 1928, the share of state production in industry was 82.4 percent and in retail trade 76.4 percent (Goskomstat, 1972, p. 59).

3.8 NEP as an authoritarian socioeconomic system

Under the conditions of NEP, there was no mandatory centralized state planning for several reasons. First, agriculture as a principal form of economic activity and domestic retail trade was to a large degree in the hands of non-state, private, decentralized individual economic agents. Second, the central government authorities had very little time to learn how to conduct comprehensive centralized planning, although in 1921, the government did create *Gosplan* (State Planning Committee).

As a result, the state was sending out plan targets to industrial trusts for some kinds of production in the form of control figures. That is, planning was not mandatory but rather indicative in its nature.

Hence, politically, NEP was an *authoritarian* socioeconomic system because the state was ruled by only one party, the Bolshevik party. All other non-Bolshevik parties and political movements were outlawed.

Thus, it can be summarized that NEP represented a multi-structural socioeconomic system that comprised within itself elements of a patriarchal natural (self-sufficient) economy, small commodity (and, first of all, peasant) production, and non-state, state industrial and trade capitalism within a strict political framework of authoritarian rule by the Bolshevik party.

3.9 NEP and its economic achievements

It is impossible to know what results could have been achieved, had there existed, instead of NEP, some other socioeconomic system during the period. However, the following figures indicate that NEP was a success. In 1928, the last year of the NEP, as compared to 1913, the last pre-war year, industrial production grew by 32 percent and agricultural production by 24 percent (Goskomstat, 1972). Also, on average, more was produced in terms of grain, meat, and milk in 1924-1928 than in 1909-1913 (Goskomstat, 1987, p. 32).

4. The last Soviet model of economic growth and development: the Stalinist model (1928-1990)

But despite the achievements of NEP as an authoritarian form of mixed capitalism, at the end of the 1920s there was a growing tendency for its transformation to a totalitarian-state form of capitalism. There were objective and subjective reasons for this movement. Let us examine them.

4.1 The objective factors leading to a transformation from NEP to the Stalinist model

The objective factors which, against the will and consciousness of the leaders of the Bolshevik regime, caused a transformation from authoritarian mixed to totalitarian state capitalism in the Soviet Union can be divided into two groups. The first group includes international factors, or external reasons; the second, internal or domestic factors.

First, let us examine the external factors. Thanks to the abolition of serfdom, railroad construction and the development of some industries, Russia, as we remember, by 1913 had achieved a certain success in reducing its economic gap with the most developed countries in terms of some economic indices. But, as we also remember, with respect to per capita economic indices, Russia remained a relatively backward country.

But the end of the XIXth – the beginning of the XXth centuries witnessed a situation where a handful of industrial European countries and the USA, one way or another, subdued many of the countries of Asia, Africa, and Latin America, that is, countries that did not participate in the industrial revolution. Thus, relatively backward countries like pre-Soviet Russia, in order not to be subjugated by more advanced industrial countries had only one option: to catch up with these Western powers by means of industrialization (Ellman, 1982, pp. 10-11).

The Soviet Union inherited from its predecessor its relative economic backwardness, which threatened the country with economic, political, and military subjugation. Therefore, the Soviet Union, like its predecessor, had to continue to industrialize itself but, unlike its predecessor, at high speed (Ellman, 1982, p. 13).

Thus, under the conditions of the first third of the XXth century industrialization for the USSR meant first of all developing heavy industry, which would maintain production of armaments. Hence, investments had to be directed primarily into the production of cast iron, steel, machinery, equipment, industrial structures, coal, oil, etc. In other words, the country had to choose as its priority the allocation of economic resources towards producing means of production for the means of production (i.e. the production of machinery for the sake of machinery) rather than for articles of consumption (i.e. the production of machinery capable of producing consumer goods for the population).

Keeping this in mind, let us return to NEP. As was pointed out, the main sector of the economy of the period was agriculture. The vast majority of economic agents in agriculture were independent (from the state) private individual peasant households. That part of the peasantry which was engaged in market activities was selling its surpluses on the market in order to purchase small agricultural implements (shovels, pitchforks, sickles, shafts, sledges, harnesses, etc.) and manufactured consumer goods (matches, salt, sugar, textiles, kerosene, and so on).

But if producing means of production for the sake of producing means of production had to become the country's priority, then peasants working for the market had to reduce their interest in selling their agricultural surpluses. As a result, a self-sufficient agricultural economy began to expand at the expense of market production. This, instead of widening, threatened to narrow sources of food and raw materials for the growth of the urban industrial proletariat and the development of industry.

Thus, the internal objective factors for eliminating NEP consisted in the socioeconomic features inherent in this system which impeded the rapid

development of heavy industry as a basis for the country's economic, political, and military independence. Among these features one can discern the following factors.

First, there was a prevalence of natural and small commodity agricultural production. Second, as a result, the necessity for authorities to reckon with the interests of independent, scattered producers who basically needed products of light industry and who, because of their small size of production, could not buy and use agricultural machinery (tractors, combines, mowing machines, etc.), that is, capital goods (the means of production) for the production of consumer goods. Third (which follows from the second), a certain subordination of the state to the peasant price policy with regard to agricultural products and, firstly, to grain, the most important (together with potatoes) nutritional product of both urban and rural populations at the time. Finally, as a consequence, there existed an impossibility of wide-scale investment in heavy industry.

4.2 The subjective factors leading a transformation from NEP to the Stalinist model

Subjective factors which brought about the demise of NEP were in essence of an internal or domestic nature. But, in the final analysis, they (though in a roundabout way) were a result of objective internal socioeconomic and political developments in the country during the first eleven years of Bolshevik rule. Let us test this assertion by examining the relations of the major classes to NEP.

First, let us look at the bureaucracy and NEP. The very fact that the state held in its hands the commanding heights of the economy created a powerful bureaucratic class. In a peasant country where even urban workers were also tightly connected to the country-side, the bureaucratic ranks could not but be replenished primarily by individuals from either a peasant or working man (semi-peasant) background.

There is no direct statistical data to prove this point. But indirectly the peasant-worker origin of a significant part of the Soviet bureaucracy from the last years of NEP can be demonstrated by the following data.

Calculations made by American sociologists show that, for example, among the 1,011 top bureaucrats of the Soviet Union and 184 key regional bureaucrats of the RSFSR[15] (all born between 1900 and 1909) following World War II (WWII) more than 80 percent were peasants and workers by birth (Hough, 1980, pp. 50, 58). That is, more than 30 years after the Bolsheviks came to power, the overwhelming majority of their leadership was of peasant and worker descent.

But we need to keep in mind that here we are dealing with the top central regional leadership. We also need to remember that at the end of the 1940s – the beginning of the 1950s, as compared to 1926, the share of the agricultural population decreased from 82 to 61 percent and correspondingly the share of the urban population went up from 18 to 39 percent (Goskomstat, 1988, p. 8).

It can be expected, therefore, that at the end of the 1920s, the share of children born to peasants and workers among the Bolshevik bureaucracy had to be higher than at the end of the 1940s – the beginning of the 1950s. But from this fact must follow certain subjective, that is, behavioral, moral, ethical, and ideological consequences of such a social composition of the dominant class of the country during the last years of NEP.

It is obvious that in belonging in one way or another to the village commune by birth, having its equalizing mentality, and being backed by state power for political

and socioeconomic privileges, members of the growing bureaucratic class could not but be hostile, angry, hateful and envious of the kulak-nepman[16] nouveau-riches as a class backed by the non-state power of money.

It probably could not have been otherwise, for the bureaucracy (the state as a corporation of bureaucrats) replaced the village commune as a corporation of countrymen and agricultural producers. Therefore, the bureaucracy considered any relatively independent owner of non-state industrial, agricultural and trade enterprises in the same way an owner would have been looked upon by the village commune: as an alien, as a blood-sucker, and as somebody who should disappear once and for all.

From this follows a specific attitude of the emerging and growing privileged class with its tendency toward developing along the totalitarian-state capitalist path against a relatively independent money class which represented a tendency of movement toward an authoritarian-mixed capitalist road, that is, on the road of the continuation of NEP. From the point of view of the bureaucracy, NEP, since it created non-state competitors for state economic agents was becoming an obstacle and, hence, had to be eliminated.

But it needs to be pointed out that as the *mir* of the 1920s was not a homogeneous and monolithic community (it included as its members well-to-do peasants, or kulaks), the bureaucracy was also not of one mind in its position toward independent non-state enterprises, and, thus, to NEP. There were certain layers within the bureaucracy, first of all, those connected to commerce and the issuing of licenses to independent non-state entrepreneurs that benefited. These bureaucratic layers gained from the continuation of NEP thanks, in part, to the kickbacks, graft, etc. they received from the nepmen. But as there were few kulaks among the overall peasantry, so too there were not too many beneficiaries of and, hence, adherents to NEP among the bureaucracy as well.

Besides, by the end of the 1920s the bureaucracy had not yet developed into a full-grown class. Therefore, it was a bearer not so much of its own interests but rather of those lower classes of Soviet society (peasants and workers) from whose ranks individual bureaucrats were rising. The time for the bureaucracy to realize its own interests had not yet come. Several decades had to pass for this to occur.

Let us speak of non-kulak peasants and NEP. What of those masses of peasants who were less enterprising, less fortunate than their more enterprising and more fortunate former fellow-members of the village commune, those peasants who were destined to remain in the *mir*? What did this class think of NEP and how did it relate to it? In the same way that members of the old pre-Soviet village commune and their new Soviet bureaucratic "brothers" related to its prosperous and successful members, on the one hand, and to the Bolshevik authorities, on the other, so did the non-kulak peasants react to NEP, namely, feelings of enmity to those who became economically relatively independent *without* the state (nepmen, kulaks, and other non-state private entrepreneurs) and servile submission to those who became socioeconomically and politically significant *within* the state (the bureaucracy).

For the Soviet peasant of the 1920s as for the pre-Soviet peasant, "power was given by God". Therefore, like the pre-Soviet Russian peasant who saw in the lordly system "God's will" (although he not always reconciled himself with his concrete landowner), so too the Soviet peasant of the 1920s also looked at the Bolshevik bureaucracy as his master (although he sometimes resented the fact that among its concrete individual bureaucrats he was able to find former fellow-villagers and their children).

All in all, it can be said that the predominant non-kulak masses of Soviet peasants, because they rejected NEP-type authoritarian mixed capitalist development in their country, objectively sided with totalitarian state capitalist development. Thus, in this period, their interests coincided with the interests of the emerging bureaucracy.

With regards to workers and NEP, since, as it has been pointed out that the Soviet worker was either peasant by birth or was tied to the village commune by a web of blood relations, to a considerable extent his attitude toward NEP resembled that of the peasant.

4.3 The industrialization debate as a prelude to the Stalinist model

NEP though was not liquidated without debates within the bureaucracy. Three sides participated in these debates: "the left" (L. Trotsky, G. Zinoviev, L. Kamenev, E. Preobrazhensky, etc.), "the right" (N. Bukharin, M. Tomsky, A. Rykov, etc.), and "the center" (I. Stalin, among others) (Erlich, 1960).

However, there was no *strategic* disagreements among the participants. They all had one strategic goal in the growth and development of the country: "socialism". They all believed that industrialization within a one-party political system and the preservation of the commanding heights would be a strategic means to achieve their goal.

They did disagree, however, *tactically*. They differed in the following: their relationship to NEP; sources of capital accumulation for industrialization; the relative roles of agriculture and light and heavy industries in the economy; the speed of economic development; the economic equilibrium; the character of central state planning; and the possibilities of building "socialism in one country;" etc.

For the reader to understand the arguments of each side, Table I presents the positions on major issues taken by the participants in what is now known as the "industrialization debate".

The reader though should not mistakenly think that the Stalinist faction had won because its subjective logics turned out to be stronger than that of either "the left" or "the right". To think this way would be, in our opinion, very simplistic.

The matter is much more complicated, for the subjective reasoning of the Stalinist side was founded on a logic of the objective needs for the economic development of the Soviet Union in the 1920s. The very realities of life forced the Stalinist faction of the party and then the entire party to arrive at the only possible conclusion of the day: accelerated industrialization was only possible if, on the basis of doing away with NEP, independent farming was abolished through its nationalization or collectivization.

In the victory of Stalinist reasoning, the dependent, slavish, communal mentality of the non-kulak peasantry, which constituted the vast majority of the country's population, prevailed over the independent, free enterprise spirit of the kulak-nepman of Russia, which constituted a very small proportion. The Stalinist faction of the Bolshevik party had won because at this historical moment it was the most consistent mouthpiece for the anti-independent, anti-free, anti-enterprising, communal interests of a significant part of the Soviet people.

But collectivization, or an apparent return to pre-1861 serfdom, did not mean a simple relapse to the feudal *mir*. No, simultaneously this was a movement forward, since this new peasant commune in the form of collective and state farms was destined to serve a process of industrialization in the country as a basis not for its "socialist" (as was perceived by the Bolsheviks), but its totalitarian-state capitalist (as it turned out) future.

Table I. The industrialization debate regarding the methods and pace of industrialization

Points of disagreement	The left	The right	The center
Priorities of the state policy of industrialization	Imbalanced growth and development: Heavy industry focus at the expense of light industry, agriculture, and consumer services Producer focus at the expense of consumer	Balanced growth and development: In the short run, of all the branches of the economy In the long run, an accelerated development of heavy industry Both, producer and consumer focus	Imbalanced growth and development: Heavy industry focus at the expense of light industry, agriculture, and consumer services Producer focus at the expense of consumer
Rates of industrialization	Rapid	Moderate	Rapid
Sources of investment for industrialization	First of all, agriculture	All sectors of the economy, including agriculture	First of all, agriculture
Investors in industrial production	First of all, independent peasant households, and also collective and state agricultural farms	First of all, independent peasant households, and also collective and state agricultural farms	Collective and state agricultural farms that through collectivization would re-place independent peasant households
Methods of investing in industrial production	Coerced non-market with regard to the peasantry: Unequal exchange of agricultural and industrial products by means of: low procurement prices of agricultural products sold by peasants to the state high procurement prices of industrial products sold by the state to peasants High taxes on all types of peasant households but, first of all, on the kulaks	Non-coerced market with regard to the peasantry: Equal exchange of agricultural and industrial products by means of: high procurement prices of agricultural products sold by peasants to the state low procurement prices of industrial products sold by the state to peasants Moderate taxes on all types of peasant households	Coerced non-market with regard to the peasantry: Unequal exchange of agricultural and industrial products by means of: low procurement prices of agricultural products sold by peasants to the state high procurement prices of industrial products sold by the state to peasants High taxes on collective and state agricultural farms
Methods of allocation of resources to attain the goal of industrialization	Mandatory central planning, when central authorities impose their will on the economy in terms of the latter's structure and rates of growth and development	Indicative planning, when consumer markets "indicate" to the planners the direction the economy might take	Mandatory central planning, when central authorities impose their will on the economy in terms of the latter's structure and rates of growth and development
Relationship to NEP	Eliminate	Continue	Eliminate

(*continued*)

Table I.

Points of disagreement	The left	The right	The center
Weaknesses in argumentation	The impossibility under the conditions of a market economy to force independent peasant households to sell their products at relatively low prices and purchase industrial products at relatively high prices. Therefore, an uncertainty about the possibility of success in using this source of industrialization Rejection of the possibility of build-ing "socialism in one country" without "a world proletarian so-cialist revolution". Hence, dampening the country's confidence in its own ability to build "socialism"	Slow pace of industrialization, thus, slow movement to "socialism" The very possibility of enrichment by nepmen and kulaks unacceptable to the bureaucracy and the vast majority of the population	No weaknesses
The outcome of the debates	Lost out due to weaknesses	Lost out due to weaknesses	Won due to lack of weaknesses

4.4 The social structure of peasant households before collectivization

The social structure of peasant households before collectivization (1927-1928) was as follows. There were 25 million small individual peasant holdings. Of these, 35 percent were made up of poor peasants, 60 percent of middle peasants, and 4-5 percent of well-to-do peasants (the kulaks) (Goskomstat, 1987, p. 35).

While all peasant households based their agricultural production on a very primitive technical foundation and used predominantly manual labor, they differed in terms of the size of land cultivated, the availability of horses and cattle, the size of employment of hired labor, the extent of working for market, and their money lending ability. The quantitative criteria used by the authorities in classifying peasant households was rather arbitrary and included the following (Nove, 1982, pp. 107-8) (Table II).

This social structure of peasant households prior to collectivization allows us to understand, first, its motivational forces and, second, its nature (voluntary or involuntary). Of course, at the time there were no public opinion polls taken in the USSR, so there was no one to ask the Soviet people (all the more so since the peasantry was overwhelmingly illiterate) about their attitudes toward collectivization. But if the dictum "social being determines one's consciousness" holds true, then the following can be assumed.

It can be presumed that poor peasants were among those who most of all applauded the collectivization drive. First, they had very little to lose from collectivization, that is, actual nationalization of their property which they had so little of as compared to other groups of peasant households. Second, they expected that the conditions of their life would improve when the middle and kulak households brought their property into collective and state farms. Third, they could not but be moved by feelings of envy towards the more prosperous members of the village commune and, hence, desired the redistribution of the latter's property forcefully if needed.

By necessity, middle peasants were of two minds in their attitude toward collectivization. It might be assumed that they, like their poor brethren, welcomed with great pleasure Bolshevik slogans of a struggle against the kulaks up to and

Characteristics	Poor households	Low middle households	Higher middle households	Well-to-do households
The size of land	Insufficient to feed their families	Barely sufficient to feed their families	Sufficient to feed their families	More than sufficient to feed their families
The availability of horses and/cattle	None	Mostly none	At least, one horse	At least, two horses and two cows
Employment of hired labor	Working part-time for a better-off peasant household	Hiring part-time labor	Hiring part-time labor	Hiring full- and part-time labor
Working for Market	None	None	None	Selling a part of the produce
Money lending ability	Borrowing money	Borrowing money	Borrowing money	Giving usury credits

Table II. The classification of poor, middle, and well-to-do peasant households

including its annihilation as a class. The middle peasant saw this as a fight against the *other*, a people better off than him and whose position he envied. But, on the other hand, those among the middle peasants whose material position was closer to that of the kulaks and who, therefore, hoped one day to move up and achieve the kulak's status, saw in the struggle against the kulaks a threat to *their own* aspirations.

It can be supposed, therefore, that collectivization had to be forced only upon the kulaks and the more prosperous middle peasants. As far as the poor and the less prosperous middle peasants (i.e. the vast majority of the peasantry) were concerned, this process was in many ways voluntary. There can be no doubt that the authorities found among these latter groups of the population the most willing and the most active participants in the drive towards collectivization.

4.5 The dynamics of changes within the social structure of agriculture as collectivization progressed (1927-1939)

Let us now look at the dynamics of change within the social structure of agriculture as collectivization progressed. Collectivization began in 1928 and by that year, 1.7 percent of peasant homesteads had been collectivized. By 1930, the share had grown to 23.6 percent, by 1931, to 52.7 percent, and so on. Finally, by 1939, almost all peasant homesteads (99.1 percent) had been collectivized (Goskomstat, 1987, p. 35).

Thanks to collectivization, the Bolshevik regime was able to achieve its most important goal: reducing the number of peasant households it had to control. Instead of 24.8 million, in 1939 there were only 0.9 million independent peasant holdings, 235.3 thousand collective farms and 4 thousand state farms (Goskomstat, 1987).

The reduction in the number of peasant households through collectivization led to the enlargement of agricultural production in the country. As a result, the average size of collective and state farms increased (Goskomstat, 1987, p. 36).

It must be emphasized that the reduction in the number of peasant households and their enlargement were not ends in and of themselves. Collective holdings were easy targets for grain requisitioning with the government having two purposes in mind.

First, it served to satisfy the immediate need for foodstuffs by the working class emerging in the cities as a consequence of industrialization. Second, the government wanted to export grain in order to purchase machinery, equipment, and technology required for industrialization.

Thus, the major purpose of collectivization was to increase the market volume of agricultural produce and, first of all, grain, by means of obligatory deliveries to the state. But it is obvious that under such conditions, of an emerging totalitarian state capitalist system, the state's growing need for a marketable part of gross agricultural product could be attained in only one of three ways (all things being equal): first, when gross agricultural product increases; second, when gross agricultural product remains unchanged; third, when gross agricultural product declines over time.

For instance, during the process of collectivization there was no real growth of gross grain yield. Thus, while in 1928 the latter was equal to 73.3 million tons of grain, in 1933 it achieved only 74.0 million tons (Gregory and Stuart, 1998, p. 80, table 5.3; Nove, 1982, p. 180).

But its marketable part had grown dramatically from 14.7 percent of gross grain yield in 1928 to 30.5 percent in 1933, that is more than twofold (Gregory and Stuart, 1998; Nove, 1982). Given that gross grain yield showed no real increase, the rise in its marketability could mean only one thing: starvation for millions of peasants in many parts of the country.

We can conclude that the voluntary (the vast majority of the peasantry) and involuntary (a small proportion of the peasantry) serfdom of the Soviet peasantry was a very important step in building totalitarian state capitalism in the USSR. The completion of collectivization implied a return to the policies of War Communism but now based on the enslavement of peasants in the kolkhoz-sovkhoz system. The majority of peasants who found themselves in collective farms actually reverted to the times of state feudalism. The minority of peasants who became employees of state farms passed onto the stage of state capitalism.

4.6 Industrialization (1921-June 1941)

Collectivization became the foundation for industrialization. Collectivized agriculture provided raw materials necessary to run mills and factories, foodstuffs for industrial workers, and, through exports of grain, imports of machinery, equipment, and new technologies for emerging new sectors of industry. The process of industrialization was carried out within the framework of three five-year plans, that is, between 1929 and June 1941.

As a result of industrialization, by 1940-1941 as compared to 1928:

(1) industrial fixed capital had grown by seven times (Goskomstat, 1987, p. 33);

(2) the structure of production in NNP had shifted in favor of industry (rising from 28 to 45 percent) at the expense of agriculture (falling from 49 to 29 percent) (Gregory and Stuart, 1998, p. 87, table 5.6); the structure of industrial production tilted heavily towards the production of means of production (rising from 39.5 to 61 percent) at the expense of production of articles of consumption (falling from 60.5 to 39 percent) (Goskomstat, 1987, p. 35); the labor force structure also changed in favor of industry (increasing from 18 to 29 percent) and services (rising from 12 to 20 percent) reducing the share of labor in agriculture (decreasing from 71 to 51 percent) (Gregory and Stuart, 1998, p. 87, table 5.6).

Thus, by 1940, one year before the Soviet Union's entry into WWII, thanks to industrialization (with agriculture serving as a milking cow for its rapid development), the Soviet Union had created a solid foundation upon which it became an industrial power. At this time, the USSR ceased to be an agricultural country from the point of view of the composition of its production even though it still remained an agricultural country in terms of the structure of its labor force[17].

4.7 The planning debate (the end of the 1920s)

Previously, it was emphasized that the Stalinist faction of the Bolshevik Party, the winner of the industrialization debate, put forward mandatory central (centralized) planning as a method of allocating resources for industrialization. In the end, mandatory central planning became the third element of the Stalinist model of economic growth and development or totalitarian state capitalism (together with collectivization and industrialization as its first two elements).

But it must be emphasized that this only happened "in the end" (over time). For, before mandatory central planning could become an integral aspect of totalitarian state capitalism, mandatory central planning, like collectivization and industrialization, had to withstand a series of great debates.

Any type of economic planning (centralized or decentralized, macroeconomic or microeconomic, and mandatory or indicative) can be understood as a conscious decision-making process with regards to the allocation of productive resources. Thus, in essence, Soviet arguments of the 1920s were concerned with the role planning would be required to play in the overall process of industrialization.

Table III[18] illustrates in a concise way the arguments of the two sides in the debates: the "geneticists", whose position was to follow or to adapt to events according to the latters' nature; and the "teleologists", whose philosophical credo was to impose their will on events, to create the future or to force the circumstances to submit to them and to work for them.

The teleologists had won, because they were expressing, first of all, the views of the triumphant "center". But, in the final analysis, both the victors (teleologists) and the losers (geneticists) had to follow events, because they were building a new society not from material that they would have liked to have had (an urban, industrial country of literate and organized working classes) but from material which they actually had (an agrarian, village-commune oriented country based on an illiterate and ignorant peasantry). However, while the geneticists were trying to use the authoritarian-mixed-capitalist qualities of this actual material, the teleologists were attempting to realize a totalitarian-state-capitalist tendency in the development of that actual material.

4.8 The cultural revolution (the 1930s) and its consequences

The cultural revolution which was carried out prior to the Soviet Union's entry into WWII (i.e. before June 1941) became the fourth important element in building a system of totalitarian state capitalism in the USSR. The revolution had a multi-dimensional character.

Points at issue	Geneticists	Teleologists
Character of planning	Indicative: plan-forecast, plan-suggestion	Mandatory: plan-directive, plan-order, plan-coercion
Correlation between economic planning and the market	Planning follows the market, is led by the latter	The market follows planning, is led by the latter
Goals of economic planning	General economic equilibrium: a balanced growth in all sectors of the economy	No need for general economic equilibrium: imbalanced growth with priority in allocating resources given to heavy industry
Participants in the debate and their relationship to NEP	Supported NEP and its continuation, but only as a tactical retreat from the long-term "socialist" goal	Against NEP and its continuation
Participants in the debate and their attitude toward party factions	Supported "the right"	Supported "the left" and "the center"
The outcome of the debates	Lost	Won

Table III.
The planning debate

First, it had a social content, because in its scale and speed of fulfillment it brought about a breakup of the old social structure and a social mobility among the population leading to the creation of a new social structure, which were simply unprecedented in Russian history.

As a result of this cultural revolution: the gentry and the bourgeoisie completely disappeared from the historical scene and were replaced by a bureaucracy as the new ruling class; the class of independent peasants was practically reduced to insignificance; the share of the collective and state peasantry grew dramatically; and blue-collar and white-collar workers became the predominant class in terms of their size (Goskomstat, 1988, p. 107).

Second, the profound social changes that occurred in the social structure of the country before the Soviet Union's entry into WWII, laid the groundwork for the liquidation of illiteracy, for the development of the educational system. While in 1913, the illiteracy rate was equal to 60 percent[19], in 1939 this index fell to 20 percent (Goskomstat, 1988, p. 153).

The number of specialists at the end of 1940 as compared to 1913 (that is in 27 years) increased more than12 times, including those with university diplomas, by 6.7 times (Goskomstat, 1987, p. 39). In 1940, every fourth Soviet citizen was engaged in various forms of the educational process (Goskomstat, 1988, p. 8; 1989, p. 7).

Third, the cultural revolution had also as its aim the ideological indoctrination of the population in accordance with the mentality of the bureaucracy, whose outlook on the world, in turn, was a carbon copy of the population. That is why in the end it was indoctrinated "students" (the Soviet people) who actually indoctrinated indoctrinating "professors" (the Soviet bureaucracy). Instead of a "new Soviet man", the people had created Philistines, from top to bottom (Raiklin and McCormick, 1988). This was because instead of "socialism", people of peasant background in a relatively backward country (late to industrialize itself) could not but build totalitarian state capitalism for the bureaucracy[20].

4.9 Evaluating the Stalinist model and its accomplishments

The Stalinist model of economic development was built at the end of the 1930s and continued to exist until 1990. Using concrete statistical data, we will now attempt to analyze its accomplishments.

For this purpose, we need to utilize Soviet statistics (together with foreign data when possible) where problems of reliability, accessibility, and interpretation are well known[21]. Being aware of their problems but not entering into any polemics with the official Soviet statistics, let us, nevertheless, go forward. We will begin with production.

First, let us look at total industrial and agricultural production. Here the achievements of the Soviet Union were very impressive. By 1986, a relatively backward country in former times became a mighty world industrial and to a certain degree agricultural power. In all production indices, important in terms of industrialization[22], it stood in first place in Europe, and in 60 percent of all production indices, in the world. In terms of these indices, whenever the USSR occupied second place it was by and large lagging behind the United States[23]. It must also be emphasized that in the middle of the 1980s, all in all, the gap between the USA and the USSR was getting smaller (Goskomstat, 1987, p. 13).

What allowed the Soviet Union to narrow the gap and in some cases overcome the economic superiority of the United States, was higher rates of economic growth. If we take, for instance, the period between 1961 and 1986, we can see that on average (annually) the USSR was growing faster than the USA in terms of national income, industrial and agricultural production, capital investment, labor productivity in total and in particular industrial, etc. (Goskomstat, 1987, pp. 654, 680-1).

But what was the cause for these higher rates of growth in the USSR in comparison to the USA? This was, first, the higher rates of growth in its labor force and capital drawn in the process of Soviet production (the extensive method of growth), and, second, the productivity of Soviet labor (the intensive method of production) (Gregory and Stuart, 1994, pp. 238-9).

Let us speak of per capita production. In 1986, the USSR stood as a leader in the per capita production of raw materials, such as oil, natural gas, and iron ore. It was third only to the Federal Republic of Germany and the USA in the per capita production of coal. The USSR was also first in the per capita production of such items as tractors, combine-harvesters, cotton fabrics, etc. (Goskomstat, 1987, pp. 674-5).

Other Soviet per capita indices of production were not as good as its total indicators and were below those of the more advanced and large democratic mixed capitalist countries of the world. Besides the USA, the latter included Great Britain, Italy, the Federal Republic of Germany, France, and Japan.

But it is obvious that no country can rank first or even second in everything it produces. Even the United States, the very embodiment of economic, political and military might in the XXth century cannot boast to be number one in all per capita economic indicators of production. For example, in 1997 the USA occupied only tenth place in per capita GDP (U.S. Census Bureau, 1999, p. 841, table 1362).

4.10 Evaluating the Stalinist model and its accomplishments: continued

We will now continue with some other comparative economic indicators. Let us start with residential construction.

Speaking of apartment construction, in 1986, the Soviet Union knew no equals among the major developed countries in the total number of apartments built. As far as this index per 10,000 population is concerned, the Soviet Union was only behind Japan (Goskomstat, 1987, p. 695).

Let us turn briefly to other indicators. In terms of the total number of students enrolled in higher education as well as per 10,000 populations, the USSR was second only to the USA in the 1980s (Goskomstat, 1987, p. 697). In terms of medicine in the 1980s, the USSR knew no equals in the total number and per 10,000 population of medical doctors of all specialties and beds in medical hospitals (Goskomstat, 1987, pp. 697-8).

Speaking of income distribution, since physical capital, land and its entrails in the Soviet Union were the corporate property of the bureaucracy, then interest, profit and rent as non-wage forms of income were accumulated and held in common by the entire bureaucratic class. Only then these types of income were becoming subject to a rather informal redistribution in favor of this or that its groups and individual members. As a result, in the Soviet Union, the basic source of all legal personal income consisted of wages and salaries.

Keeping that in mind, let us compare the distribution of income in the USSR with that of some Western countries, such as Australia, Norway, Great Britain, France, Canada, the USA, and Sweden, in the years 1960-1970. For this purpose, let us utilize data for the 10 and 20 percent of households with the lowest and highest incomes (after taxes) per household.

The inquiry reveals that the distribution of Soviet legal personal income after taxes among urban households was close to that of Norway, Sweden, and Australia. Similar to the Western countries, there was an unequal distribution of income in the Soviet Union. Thus, while a fifth of Soviet households with the highest incomes was earning more than a third of the country's income, another fifth with the lowest incomes had less than one tenth of total Soviet income, or almost 4.5 times less than the first group (Bergson, 1984, pp. 1070, 1072).

In terms of wealth, in the USSR, under the conditions of practically a total absence of atomized ownership of the means of production and land, physical forms of legal individual wealth could be represented only by such items as personal individual houses, cars, furniture, etc. Financial forms of wealth (or financial wealth) included such items as state bonds and personal savings deposited among savings institutions within the country.

Lastly, wealth in the Soviet Union was distributed quite unevenly. The top 25 percent of Soviet households owned 70 percent of all households' wealth and 70 percent of the latters' financial assets (Vinokur and Offer, 1987, p. 43). This situation was similar to that of the major developed countries of democratic mixed capitalism.

4.11 Evaluating the Stalinist model and its accomplishments: concluded

Let us now finish with some social indices of Soviet development and growth from a comparative perspective. But before doing so, we need to know the size and the density of the population per one square kilometer for each of the six countries compared earlier (such as, we remind the reader, the USA, Great Britain, Italy, the Federal Republic of Germany, France, and Japan).

In this comparative framework, in 1987, the USSR had no rival in terms of the size of its population (around 281.7 million people) and of its land territory (22.4 thousand square kilometers). But the density of its population was lower than that of: the USA, by twice; France, by 8 times; Italy, by more than 15 times; the Federal Republic of Germany, by more than 17 times; Great Britain, by more than 18 times; and Japan, by around 26 times (Goskomstat, 1987, pp. 699-701, 703, 707).

In other words, the Soviet Union was a relatively sparsely populated country. For example, in order to achieve at least the density of its ideological and political rival, the United States, the USSR would have had to increase its population more than twofold to approximately 578 million people.

Taking into consideration this factor, we will look first, at the general rates of birth, death, and natural increase in the population of the USSR as compared to these other six countries.

In 1990, the USSR occupied first place in terms of its birth rate per 1,000 population (Goskomstat, 1991, p. 665). This, of course, was a positive factor for a relatively sparsely populated country.

But by 1990, the Soviet index of the death rate per 1,000 population was not good: it was higher of that of four countries (Italy, the USA, France, and Japan), although smaller than in Great Britain and the Federal Republic of Germany (Goskomstat, 1991).

As far as the resulting natural rate of population growth per 1,000 people is concerned, here the Soviet Union ranked at the top, second only to the United States (Goskomstat, 1991).

Other indices of socioeconomic growth at the end of the 1980s were as follows:

(1) The rate of infant mortality in the Soviet Union was the highest among the six countries: from 2.4 times as high when compared to Great Britain to 5.5 times as compared to Japan (Goskomstat, 1991, p. 666). There were several reasons for this negative factor: low-quality medical services, poor housing conditions, rampant alcoholism among parents, etc.

(2) Life expectancy at birth for both Soviet men and women was less than in Britain, the United States and the Federal Republic of Germany, by 5.7 years, and Japan, by 9.7 years (Goskomstat, 1988, p. 426, 1991, p. 667). Among the causes for such a negative phenomenon were: bad habits (alcoholism and smoking, especially among the male population), work injuries due to an outdated and formal system of industrial safety, and again poor medical facilities and services (Goldman, 1983, p. 101).

But despite some negative tendencies in Soviet development, it must be emphasized that by the end of the 1980s the Soviet Union had become an urbanized country: the majority of its population (more than 65 percent) were city dwellers (Goskomstat, 1988, p. 416).

4.12 An Overall assessment of the Stalinist Model

Of course, there are many other socioeconomic factors illustrating the achievements of the Soviet model of totalitarian state capitalism. But we will stop here.

What conclusions can be made from what we already know? Socioeconomic conditions in the Soviet Union at its mature age were quite good, although, of course, not without some contradictions. In terms of total production, the USSR was a world economic power, second only to the USA and first when compared to Europe. Speaking of total production of the most significant items, the Soviet Union consistently led (first-second places) in the world and was second compared to Europe. In total production of main items, the USSR held, as a rule, from first to third place in the world.

As the years progressed, more and more the country was narrowing the gap between itself and the United States in indices of total production (with the exception of productivity in agricultural labor). Again, the Soviet Union was able to reduce this gap thanks to its higher rates of total labor productivity over long periods of time.

Soviet per capita (per 1,000 and 10,000) indicators though were not as good as its total indicators. But here too the situation was getting better.

Although a shortage of housing did remain, this problem was being solved gradually: in the 1960s-1980s, the USSR was building more housing in total and per capita terms than any other major industrial country of the world (save for Japan).

The Soviet Union was also a leading country in the world (after the United States) in terms of total number of university students and per 10,000 population as well.

The number of hospital beds and medical doctors of all specialties in total and per 10,000 people exceeded that of all major industrial countries.

There were problems, for instance with high rates of mortality per 1,000 newborns but in the 1980s this index was declining.

The distribution of individual incomes and wealth in the USSR resembled that of the largest most advanced countries of the world.

Again, the country had problems with the quality of its products, services, housing, etc. But in gradually opening up to the world and feeling economic pressures from Western firms, Soviet enterprises were being forced to change towards the production of more competitive goods and services.

And the list goes on . . .

Thus, if at least quantitatively things were not going all that badly and qualitatively were even improving, why then was there a breakup of the Stalinist model? What were the real, concrete causes of its disintegration?

For, it is obvious that there is no country in the world for which everything goes well. So what was it that destroyed Soviet totalitarian state capitalism?

4.13 Causes of the collapse of the Stalinist model

Viewed from a philosophical point of view, the Soviet experience confirms Karl Marx's dictum that it is people who create history. But the Soviet experience proves this by correcting Marxist thought: people make their own history not only actively but passively as well. Soviet village-communal-type man created the Soviet bureaucracy in his own image. For, it was the passive slavish-peasant mentality of the Soviet people which had broken the early fanatical and romantically naive Bolsheviks. It was this people's passivity which forced the Bolsheviks, in the final analysis, to take upon themselves the management of all life in the country and, as a result, unwittingly to turn themselves into a ruling class of Soviet society.

But as Soviet society progressed, the early, predominantly semiliterate, village-communal-type Soviet bureaucracy (an outcome of the village-communal peasantry) was destined to accomplish a tardy industrial revolution in the country and in turn (as a result of this industrial revolution) gradually was being transformed itself, becoming more and more urbanized, more literate, less village-communal, and finally a more individualistic bureaucracy.

Due to such a metamorphosis, consequences became causes. The new bureaucracy was creating and "educating" the new, industrial, urbanized, literate Soviet people. And now, it was also this new bureaucracy which was leading the Soviet people towards the destruction of this same socioeconomic structure which, at one time, the Soviet people had "forced" the bureaucracy to create.

Thus, in our opinion, the decisive factor which caused the destruction of the Soviet socioeconomic system was not economic but social. The system of totalitarian state capitalism was crushed by the very bureaucracy which managed its creation and whose interests (a significant part of the bureaucracy) the system, at some point, stopped to satisfy[24]. In our view, no other reasons can fully explain the disintegration of the mature Stalinist economic model.

However, there are those who argue that, on the contrary, it is precisely the economic factors which led to the demise of the Soviet economic structure. Let us listen closely to some of these people.

A Russian economist (Kolodko, 2000, pp. 7-9) writes:

> Under the centralized planning system, economic growth had its own peculiarities:
>
> (1) . . . a cyclical recurrence of economic development . . . Although the total volume of output was systematically growing, fluctuations of the average annual indices . . . remained. The periods of accelerated growth were followed by periods of adjustments, after which everything repeated itself . . .

"So what?" one is tempted to ask. People in much less developed countries of the world might say "we would like to have your problems". In these countries a cyclical recurrence of economic development includes not only accelerated or decelerated positive but negative rates of growth as well. But these people do not change nor do they have any intention to change their socioeconomic structure[25].

The Russian economist continues (Kolodko, 2000, pp. 7-9):

> (2) The quality of economic growth . . . was poor . . . no success had been achieved to fully overcome the syndrome of shortages."

But these two negative factors, the poor quality and shortages of basic commodities, had been an integral feature of the Stalinist model of economic development from the very first day of its appearance. Moreover, as far as scarcity of consumer goods was concerned, this was a much more painful phenomenon during the early years of this model, the years of the Stalinist five-year plans (when entire villages were dying out, when the village was "traveling" to the town in order to "get" foodstuffs) than during the Brezhnev-Gorbachev periods when the problem of village hunger was practically resolved. And, nevertheless, "socialism" collapsed in the 1990s and not in the 1950s.

The same Russian economist puts forward yet another argument (Kolodko, 2000):

> (3) Despite high rates of economic growth, the standard of living of the population of ["socialist"] countries remained low . . . from the point of view of the population, it was growing rather slowly which caused social dissatisfaction . . ."

This statement actually repeats what was said earlier in point 2. Yes, the Soviet standards of living were lower than that of the major advanced countries. But they were higher than in many other countries in Asia, Africa, and Latin America[26]. Why did these countries not alter their socioeconomic systems?

It is true that in absolute terms Soviet standards of living in the 1980s were much higher than that of the 1950s. It is also true that in relative terms, that is, from the point of view of the Soviet people's expectations, it was low. But we can also assume that this lag existed earlier on as well. So if the lag between reality and expectations in the country's standard of living had persisted for a long time; if the lag was the cause of the Soviet Union's demise (as the economist asserts), why such a rush at this particular time to change the system and bring this incongruity into conformity?

This Russian economist also believes that

> (4) Under the conditions of centralized planning in the economy, there emerged a peculiar "fatigue of growth". With completion . . . of the period of high rates of growth in the [19]50s-[19]60s, . . . [the latter] considerably decreased . . . [because of] the lowering of [the] efficiency [of investment] (Kolodko, 2000, pp. 7-9).

But there is nothing "Soviet" in this phenomenon. The "fatigue of growth" mentioned is known to many countries having had to start from a very low level in their development. These countries initially were able to achieve significant rates of growth and after that, as they matured, were forced to sharply reduce the speed of their economic development[27]. At different historical times, this was the experience of Great Britain, the United States, and other developed countries of the world. But none of these countries, during a slow down in their rates of economic growth, had to breakup their socioeconomic structures.

5. The post-Soviet model of economic growth and development: 1991-present

According to the author, it is the bureaucracy which did away with the system of totalitarian state capitalism. In one of his works (Raiklin, 1993, pp. 10-11), this author characterizes in the following way the Soviet bureaucracy in its later years:

> In its totality, the bureaucracy is the capitalist owner of national wealth, which includes the means of production. But, in each of its parts, the bureaucracy is simply a capitalist possessor of various portions of productive resources. As a result of the possessing function, the bureaucracy is very heterogeneous.
>
> By means of *horizontal* differentiation, the Soviet bureaucracy fulfils its decision-making tasks in a variety of specialized activities that Soviet society requires. For this reason, there is the . . . party bureaucracy, the economic, military, ideological and trade-union bureaucracies, and the bureaucracy of the soviets.
>
> Through *vertical* differentiation, the various bureaucratic factions display the various levels of their authority in the decision-making process. Thus, within each horizontal stratum, and from top to bottom of the hierarchical pyramid, there are central, republican, regional, and even lower layers of the bureaucracy.

From such a complicated web of relations, which became even more intricate by Mikhail Gorbachev's reforms of *perestroika* and *glasnost*[28], there followed a divergence of interests and motives of activities for various parts of the bureaucracy in the decaying Soviet and emerging post-Soviet system. The various approaches of these various strata of the Soviet bureaucracy towards the socioeconomic structure passing from the historical scene and to that of the arriving historical scene are discussed by this author yet again in his other works[29].

5.1 How the post-Soviet socioeconomic system evolved: general remarks

Let us now examine (in a rather cursory fashion) how the post-Soviet socioeconomic system, certain elements of which were emerging during the late Soviet period, evolved. Our analysis is divided into the following four short parts[30].

In the first part, we will explain the process of decentralization of national bureaucratic property and in the second, of the process of its territorialization. In the third part, we will analyze the process of bureaucratic and non-bureaucratic decentralization. Finally, in the fourth part we will examine the process of privatization of national and territorial bureaucratic property and its transformation into non-state private property[31].

It needs to be emphasized, however, that in the process of transformation, none of these movements display themselves in pure form. On the contrary, they (these movements) are whimsically entangled with one another.

5.2 The intra-bureaucratic process of decentralization of national bureaucratic property

The intra-bureaucratic process of decentralization of national bureaucratic property in its essence is a process of transformation in the national bureaucratic *possession* of a portion of property into a group-bureaucratic *possession* of this part of property while preserving the national bureaucratic *ownership* of the latter[32]. Such a transformation cannot but be ambiguous for it depends on the correlation of forces between the central bureaucracy and that segment of the economic bureaucracy which "receives" in its possession a part of the national bureaucratic property.

Here, in this relationship, three outcomes are possible. First, if the central bureaucracy is dominant, then the part of property to be transformed not only formally but actually remains within the realm of national bureaucratic ownership (the unitary enterprise, or *unitarnoye predpriatie*) (Abalkin, 1997, p. 224).

In the opposite case, the part of property formally remaining national bureaucratic in terms of its ownership is actually transferred into group-bureaucratic ownership (a joint-stock company, or *aktsionernoye obshchestvo*) (Abalkin, 1997).

Finally, if between the central and lower economic bureaucracies there is established the semblance of a balance of power, then both the formal and actual limits of ownership and possession become blurred (something between the first two).

5.3 The process of territorialization of property

The process of territorialization of property is the transfer of its possession and ownership from the national bureaucracy to a territorial-group bureaucracy. However, like in the case of decentralization, a territorial unit (a region within the Russian Federation or a municipal unit), which "receives" a piece of property, then uses or possesses it not directly but through an enterprise. Thus, from the point of view of *possession*, the process of territorialization of national bureaucratic property is reduced in a roundabout way to a regionalization and municipalization by the enterprise of a corresponding region or a municipality.

In many ways, regions mimic federal institutions and municipalities in turn mimic the regions. This then means that after territorialization the kind of enterprise formed at the regional or municipal levels (unitary or joint-stock) also depends on the relationship between central and regional as well as regional and local bureaucracies.

5.4 The process of bureaucratic and non-bureaucratic decentralization

The process of bureaucratic and non-bureaucratic decentralization is a transformation of a certain part of the national bureaucratic property and territorial bureaucratic property into various kinds of possession (management and usage) by non-bureaucratic economic agents. In its essence, such a decentralization is a movement in *possession* of a piece of national and territorial bureaucratic property outside of the vertical bureaucratic pyramid (the piece had been an integral part of this pyramid). This type of decentralization might be classified as the formation of a decentralized state and non-state monopoly: "state" in the sense that it belongs to either the state (the bureaucracy as a whole) or a territorial owner (a regional or local bureaucracy); "non-state" in the sense of its possessor.

These could be state- or municipal-owned unitary enterprises, joint-stock companies, etc. which, while remaining owners of this property, transfer the

property for use (possession) by non-bureaucratic outsiders in the form of leases or trusts (Abalkin, 1997).

5.5 The privatization of national and territorial (regional and local) bureaucratic property

Let us proceed to the privatization of national and territorial (regional and local) bureaucratic property and its transformation into non-state private property. The amorphous and ambiguous conditions of post-Soviet Russia at the end of the twentieth – beginning of the twenty-first centuries in essence are repeating those of Czarist Russia: interlocking relations between property ownership and power, so that with a change in power, property ownership changes hands as well (the fate of Menshikov, a close associate to Peter the Great, is a good example of that relationship in old Russia). The same might be said about the process of privatization in the post-Soviet period: it remains murky, vague, and uncertain.

It is therefore no wonder that the larger, more important and "tasty" a piece of the national and territorial bureaucratic property was, the lesser the degree to which it was subject to *actual* denationalization or privatization. *Full* privatization was possible with respect to such state and territorial property as small enterprises in such sectors as retail, services, public catering, etc.

As far as larger enterprises (in particular, producing industrial and agricultural products, extracting raw materials, working in mass media, etc.) are concerned, their privatization during this period was a rather *partial* or *incomplete* "departure" from national and territorial bureaucratic property ownership to non-bureaucratic economic agents: property was not fully transferred to these agents. All this means that under post-Soviet conditions at the end of the twentieth – beginning of the twenty-first centuries, being a partial and incomplete process, the actual privatization of large and important national and territorial (group: regional and municipal) bureaucratic property was "producing" a *mixed*, *state and non-state* "product". The state's share (the national bureaucracy) in this "product" depended directly upon the strength (weakness), honesty (dishonesty) of certain layers of the central and territorial bureaucracies vis-à-vis those state and non-state economic agents which craved this "tasty morsel"[33].

5.6 The basic battles within the post-Soviet system

Such a transformation in national (federal) bureaucratic ownership and possession of economic resources predetermines and delineates the basic battles within the post-Soviet system:

(1) Infighting within enterprises among their managers and employees for:
   - Property control, possession or ownership.
   - The distribution of income between profits and wages.

(2) A competitive struggle within various economic sectors.

(3) A fight for property ownership or possession within group (branch, regional and municipal) bureaucracies (financial-industrial groups). This struggle is taking place between:
   - Enterprise managers.
   - Enterprise managers, on the one hand, and bank managers, on the other.

- Enterprise managers, on the one hand, and outside investors, on the other.
- Bank managers.

(4) A battle between decentralized state and semi-private (semi-state) monopolies (financial-industrial groups):

- For property ownership or possession.
- To influence the central national (federal) bureaucracies of power structures, money in temporarily circulation and budgets through the so-called national (federal) oligarchic[34] system.
- To influence the regional bureaucracies of power structures and budgets through so-called regional oligarchic[35] systems.

In the opinion of this author, post-Soviet Russia is dominated by oligarchic clashes in which the oligarchs attempt to influence the national (federal) and regional bureaucracies. Therefore, the post-Soviet direction of movement depends on the resolution of these battles. Through these collisions, one or another oligarchic group is temporarily accreted with federal (national) or regional (territorial) power as if privatizing it.

This accretion, temporary for individual oligarchic groups but permanent for the entire oligarchic system, to a large degree predetermines the *state* character of the post-Soviet authoritarian capitalist structure. We talk about the "state" here, because decentralized state (bureaucratic) and semi-state (semi-bureaucratic) monopolies dominate. This creates a whole bouquet of socioeconomic diseases: rampant anarchy, instability, corruption, criminality, growth in unemployment, inflation, a decrease in living standards, non-payment of wages, etc.

6. An attempt to anticipate the future: reflections on the direction of development in post-Soviet Russia

In the last part of our work we will endeavor to look at the post-Soviet Russian future, elements of which, in our opinion, are emerging in the post-Soviet Russian present. Since we can talk here only about the most general contours of Russia's future, our reflections first, will be of a very general character and second, by necessity, will be very brief.

In this author's opinion, one should not think that the outcome of the existing battles and clashes will depend on wisdom (stupidity), knowledge (ignorance), understanding (misunderstanding), a strong (weak) will, kindness (spite), an ability (disability) to draw correct and smart developmental programs or on some other *subjective* qualities of the participants of post-Soviet Russian battles and clashes. A forthcoming outcome of these struggles, in our view, is deeply predetermined by the *objective* circumstances under which post-Soviet Russian society is functioning.

The framework of post-Soviet Russian development has a general, particular, and individual character. Within its *general* limits, present-day post-Soviet Russia cannot but continue to proceed at the stage of capitalism. This statement needs no further proof or evidence, since at present all countries of the world, without exception, one way or another, are moving along the road of capitalism.

Within the *particular* frame, present-day post-Soviet Russia has no option but to move from state (bureaucratic) to mixed capitalism. This assertion requires no further proof either because the transformation of national bureaucratic property ownership in the Soviet period into group bureaucratic and non-bureaucratic property ownership of the post-Soviet period proceeds according to its own internal dynamics: the transformation from group bureaucratic and non-bureaucratic property ownership into non-bureaucratic (non-state and private) property ownership.

The elements of an emerging economic non-bureaucratism are on hand: a growing, albeit still weak, non-oligarchic entrepreneurship; the growth, although not yet steady, of non-state joint ventures with foreign firms, etc.

There would be no specifically Russian in the transformation of state capitalist Russia into mixed capitalist Russia. For, at the end of the twentieth – beginning of the twenty-first centuries, other former Soviet republics and some countries of Eastern Europe were moving in this direction.

What is unclear is the *political* form of this transformation. The political structure of Russian post-Soviet mixed capitalism cannot remain the same as it is now at the beginning of twenty-first century under post-Soviet state capitalism: semi-anarchically authoritarian, i.e. a symbiosis of central bureaucracies which, to some degree, are impotent in their relations to economic group and political regional bureaucracies, on the one hand, and a relatively passive population with formal elections and weak political parties and movements, on the other. For, the emerging non-oligarchic businessman objectively needs a united and common market, with unified, equal rules of play for everyone. This fledgling Russian middle class, like his Western counterpart of the third estate at the period of the birth of capitalism, needs strong central authority.

But the character of this power depends on the current mentality, attitude, wants of the people, and their willingness, one way or another, to participate in their country's affairs and future. If such a willingness exists, if there is, in other words, a strong civil society within the country, then central power can be *democratic* in nature.

On the other hand, if such a willingness does not exist, if people expect that a "leader" or a "hero" will do for them what they are supposed to do for themselves, if there is, in other words, no civil society or if it is weak, then the central power will be of an *authoritarian* character[36].

Obviously, Russia's non-oligarchic businessmen would find a strong democratic government, with its requirements of law obedience by all and backed by an independent judiciary, more suitable to their needs.

But there are two primary problems for the economically active non-oligarchic part of post-Soviet Russian society that stand in the way to achieving their democratic goal. First, the non-oligarchic businessman is politically passive and like the rest of the population waits for a political "handout". Second, this representative of the emerging Russian middle class is not supported by the general public which distrusts any kind of private business endeavor in Russia, be it oligarchic or non-oligarchic.

Therefore, the question of the political form of future mixed capitalism in Russia can be answered only by the desires of the Russian people themselves. Their recent preferences (their voting patterns, their opinions reflected in public opinion polls, especially with regards to the strengthening of the vertical line of power by current

Russian president, V. Putin) point to a direction of mixed capitalism in an *authoritarian* form. For what aim or purpose, you may ask? In the name of fairness and order.

However, one should not overlook the fact that the present post-Soviet structure personified by Putin, represents an authoritarian regime whose goal is not struggle against the oligarchic system, not for mixed capitalism of fairness and order (as it is anticipated by many Russians) but to protect, to consolidate the oligarchic system of privileges and preferential order under the conditions of fighting against its most odious personalities[37].

From this it follows, that the present-day's oligarchic authoritarianism, bringing misery to a vast majority of the Russian people, making Russia a raw material appendage to the Western world[38], denigrating Russia to the position of a third-world country, can only be replaced by an anti-oligarchic authoritarianism. In the end, democracy as a political form of mixed capitalism in Russia will have to wait its turn[39].

Notes

1. The meaning of these terms will be explained in the process of our analysis.
2. There were exceptions. There were regions with no serfdom: the Baltic region (the present-day Latvia, Lithuania, and Estonia), Finland, and Poland where serfdom was abolished in the beginning of the nineteenth century. Also, Siberia knew no serfdom: the region was too remote from the European part of Russia and was very sparsely populated. In particular, serfdom was not on the agenda of the Russian government in the area in order to encourage its settling by the Russian peasants.
3. The conditions of land redemption were more favorable to the Czarist and state peasants.
4. We say "a significant part", because another part of the gentry which managed its economic affairs in a capitalist manner had outgrown the feudal ways of management.
5. Petr Stolypin who became Russian Prime-Minister in 1906 introduced these reforms.
6. In contrast to the Soviet and post-Soviet practice, in Czarist Russia people were considered Jewish not according to their "blood", but in accordance with their religion of Judaism.
7. Old Believers were either of a merchant or peasant origin.
8. "The duality of power": The March Revolution of 1917 gave rise not only to the Provisional Government dominated by the representatives of the bourgeoisie-feudal elements of society but also to the Soviets which represented the interests of the workers, peasants and soldiers. Thus, the Provisional Government had to share its power with the Soviets.
9. We will elaborate on the Stalinist system of totalitarian state capitalism in a subsequent part of the work.
10. One should not overstate the ability of the Bolshevik regime, getting stronger but still relatively weak, to enforce policies of War Communism. For, it should be noticed that, side by side with a legal economy more or less following the principles of prodrazverstka, there also existed an illegal economy, which was independent from the Bolshevik rule.
11. But again, the extent of state control should not be exaggerated: together with a legal government distribution of production there was also an illegal black market where a significant portion of agricultural products of peasants was exchanged for a significant part of industrial products of urban dwellers.
12. Recall that by "capitalism" we understand a socioeconomic system of wage labor.
13. The Bolshevik regime classified peasant households as poor, middle and well-to-do (kulak).

14. Collective farms as a form of state feudalism eventually became an agricultural helper of industrial state capitalism.
15. Russian Soviet Federative Socialist Republic as one of the union republics of the Soviet Union.
16. "Nepman": a person who "made it" (lawfully or unlawfully) as a private (non-state) economic agent during NEP.
17. To look at the Soviet industrial development from a historical perspective, the reader is advised to take Raiklin (1992).
18. The table is based on Gregory and Stuart (1998, pp. 74-8). To the best of our knowledge, the terms "geneticist" and "teleologist" as applied to the planning debate first appeared in Bazarov (1928).
19. For comparison: the rate was 11 percent for the USA in 1900 (Gregory and Stuart, 1998, p. 33, table 2.5).
20. Capitalism, which is a system based on wage-labor, presupposes market relations (commodity production). On the commodity (market) nature of the Stalinist model of economic development, see, for instance, Raiklin and Yousefi (1993); Raiklin and Gillette (1988).
21. These issues are discussed in Nove (1961, pp. 308, 310) and Bergson (1964, pp. 207-8).
22. Such as total industrial production, production of electric power, oil, gas, cast iron, steel, iron ore, tractors, machine-building, cement, potatoes, milk, eggs, etc.
23. See Goskomstat (1987, p. 12). Exceptions are coal production where the USSR occupied the third place behind the USA and China, and grain production (third place behind China and the USA) (Goskomstat, 1987, pp. 661-9).
24. The author makes this argument in several of his published works. The reader is urged to read at least three of them where the following is discussed: (1) Raiklin (1988), the Soviet problems; on pp. 12-23, the menu of available solutions; (2) Raiklin (1993), the four pillars of the Stalinist model and their weakening; on pp. 46-48, the socioeconomic factors of the downfall of the Soviet system; on pp. 63-78, causes for the disintegration of the country; etc.; (3) Raiklin and McCormick (1988), moral-psychological reasons for the evolution of the Soviet system.
25. See, for instance, some data on the average annual growth of total GDP and GDP per capita of some countries in 1997-1998 (The World Bank, 1999/2000).
26. For instance, " . . . in 1982 the Soviet Union occupied the 38th place in the world in terms of consumer expenditures per capita" (Raiklin, 1989a, p. 17).
27. On this subject, see Gerschenkron (1962, ch. 1).
28. On the subject of Gorbachev reforms, see, for instance, Raiklin (1988; 1989b).
29. See Raiklin (1991b). Here the following issues are discussed: the structure of the Soviet bureaucracy (pp. 3-5), relations of ownership and possession (pp. 5-9), bureaucracies in their proximity to the national wealth and its creation (pp. 9-13), denationalization and its forms (pp. 13-16), etc. See also Raiklin (1993), where some basic directions in the behavioral motivation of various bureaucratic layers during a period of transformation from the Soviet to the post-Soviet socioeconomic structure are discussed: the status-quo bureaucracy, the bureaucracy striving to move from centralized to decentralized state monopoly, the bureaucracy willing to move from state monopoly to semi-private monopoly, and the bureaucracy allowing the transfer from state monopoly to limited decentralized private monopoly and/or to decentralized private competition.
30. An elaborate analysis of the problem can be found in Raiklin (2001).

31. Since there is not enough information about the creation of non-state private enterprises outside the national and group bureaucratic property, this problem will not be discussed.
32. To understand the meaning of terms "possession" and "ownership" and their relation to each other, the reader is again advised to read, for instance, Raiklin (1991b, pp. 5-9).
33. The problems of post-Soviet privatization in its actual, social meaning (the way it is) and in its formal, legal-juridical form (the way it should be, according to the authorities of the Russian Federation); statistics (quantitative data) and qualitative opinions about the character of privatization; some statistical data on the functioning of the post-Soviet Russian socioeconomic system; the grave social consequences of the proprietary transformation for the majority of the Russian population – all these issues are discussed in detail in Raiklin (2001).
34. The Russian federal (or regional) oligarch is a person who: one way or another, "received" a relatively large piece of the national (or regional) property from a corporation of bureaucrats responsible for that piece of property; promised to use (manage) the property in such a way that a portion of incomes on it regularly and steadily should flow to the bureaucracy as a corporation. (On the origin of oligarchs, see, for example, Goldman (2003).

    Formally, the Russian oligarch is the *owner* of that piece of property "given" to him.

    Actually, he is its *possessor* even if he controls share holding in "his" company. It cannot be the other way in a country where there is no independent judicial system, no civil society able to control the actions of bureaucracies which "sell" pieces of property they supervise (possess) to oligarchs for peanuts and which control the punitive organs. And, under the circumstances, the same bureaucracies with the same success at any time can "expropriate" the pieces of property "given" by them to the oligarchs, completely disregarding the pieces of paper called shares. For, the phenomenon of federal (national) oligarchs in Russia is a kind of a union, an agreement between the highest (national, federal) bureaucracies, on the one hand, and managers (oligarchs) of large, amorphous (from the point of view of their ownership) corporations: the bureaucrat provides a "cover" for the oligarch, and the oligarch "feeds" the bureaucrat participating in sharing the oligarch's profits. (The same is also true for regional oligarchs.) For any reason, the bureaucracies can always break the contract, so that the oligarch might find himself stripped of at least a part of "his" property. Gusinsky, Berezovsky and Khodorkovsky are good examples of this.
35. Whatever is said above about the federal (national) oligarchs is true, in the view of this author, of the regional oligarchs as well.
36. The power becomes *totalitarian* when the means of production are owned by the state (the bureaucracy).
37. On the character of Putin's regime as a wordy mimicry of Yeltsin's regime, see, for instance, Raiklin, 2003a, pp. 166-99.
38. On negative changes in the standard of living of the Russian people and on the raw-material's structure of Russian exports since the beginning of the 1990s, see Goskomstat Rossii, 2003.
39. Arguments on the impossibility of democracy in the present-day Russia are presented in Raiklin, 2003b, pp. 87-112. Here a form future Russian democracy might take is also discussed.

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Book review

The Nature of Economic Growth: An Alternative Framework for Understanding the Performance of Nations

Anthony P. Thirlwall

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This book presents the lectures given by Professor Tony Thirlwall to graduate students at the National Autonomous University of Mexico (UNAM) a couple of years ago. It puts forward, in a concise and well-written form, an analytical perspective on the determinants of economic growth – one that contrasts with the neoclassical view so much in vogue today. Its publication is most welcome, and the book should be recommended reading to students and economists interested in understanding the constraints and causes of economic growth.

The first two chapters give a historical review of the key contributions to growth theory. They show how the key insights of Adam Smith, and their extensions by, *inter alia*, Allyn Young and Nicholas Kaldor lead to an interpretation of economic growth as a cumulative process caused by the interaction of the division of labor, the effect of increasing returns on productivity, and of market expansion. It shows how Malthus, Ricardo and Marx, based on a nonsanguine assessment of the relevance of increasing returns, built analytical models characterized by an inherent tendency towards stagnation and crisis. Harrod's analysis of the warranted growth rate, the natural growth rate and the actual growth rate is introduced and relied upon to succinctly explain the Cambridge controversy that marked the debates on economic growth between the 1950s and 1980s.

The neoclassical theory of economic growth, both in its old version put forward by Solow and in its "new" version triggered by Paul Romer and Robert Lucas, is put to task and found wanting. On the one hand, the book claims that this theory has a tendency to "reinvent the wheel", borrowing insights from non-mainstream economists but not always giving them due recognition. In this sense, it is striking that Allyn Young and Nicholas Kaldor are usually ignored by mainstream economists notwithstanding that some of their contributions predated key results of the New Growth Theory.

On the other hand, the book argues that the neoclassical approach – in both its old and modern vintages – is fundamentally flawed. Its assumptions that, in the long run, price changes clear all markets and thus, labor and capital must be fully utilized are considered far from adequate. They ultimately force an interpretation of economic growth as determined by the supply of inputs and technological progress, with no role whatsoever played by demand. But such assumptions and – much more importantly – the neoclassical theory's belief about a unidirectional causation from the supply of factors to long-term growth, is at odds with the empirical evidence. In fact, growth episodes in developing countries are typically interrupted and even derailed by demand constraints that become binding way before capacity and labor are fully utilized; i.e. long before supply constraints start to operate.

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The rest of the book is devoted to presenting the alternative theoretical framework that Thirlwall and his associates have developed in the last thirty years. The relevance of their assumptions and the adequacy of their application to empirical analysis is assessed. For this alternative perspective, long-term economic growth is driven by demand. One premise of this approach is that economic growth depends on the dynamism of activities subject to increasing returns as well as on their interactions with the other branches of economic activity. A second premise is that, in small open economies, long-term growth must be accompanied by a sustainable path of foreign indebtedness.

Following Veerdorn and Kaldor, the alternative framework places manufacturing as the engine of growth, given that its expansion pushes up total productivity. Such expansion is due to the effects of increasing returns in manufacturing as well as the positive externalities that it generates by absorbing surplus labor – unemployed or that engaged in low productivity activities. The book argues that at early stages of development, growth of manufacturing requires a dynamic domestic market. At later stages, its growth is sustainable if and only if it is driven by a strong expansion of external demand. In other words, it will be sustained only if it is "export-led". It is precisely in building relevant export-led growth models that Thirlwall has made his seminal contributions.

His original theoretical model was introduced in the late 1970s, and rests on the assumption that the current account deficit cannot be indefinitely financed. In its most simple interpretation it concludes that the long-term rate of economic growth is determined by the ratio of the income elasticities of demand for exports and for imports. The model is elaborated to include capital flows, but its main conclusions are still valid: long-term growth is determined by the rate of expansion of exports relative to the income elasticity of demand for its imports.

The last chapter tests the hypothesis of the endogeneity of the supply of factors relative to their demand. It concludes that, within relevant ranges, the natural rate of growth is actually dependent on the actual rate of growth of the economy. Such a conclusion questions, once again, the neoclassical school's assertion that the availability of resources is the binding constraint on economic growth.

The alternative approach put forward in this book has important implications for the design of economic policy, particularly in developing countries. It shows that exports may be an engine of growth only if their dynamism is not compensated by the expansion of import penetration. This simple, but important, insight tends to be overlooked by advocates of free trade. Indeed, in many Latin American countries, trade liberalization was accompanied by a rise in the income elasticity of demand for their imports that more than compensated the increase in their exports drive.

It highlights the need to monitor the balance of payments trade and current account deficit. And, consistent with its Keynesian roots, it concludes that long-term trade or current account deficits will not be corrected by fluctuations in exchange rates. These deficits reflect structural problems that, to be corrected, require greater investments to improve infrastructure, to modernize and expand the capital stock of machinery and equipment, combined with sectoral policies that improve the competitiveness of domestic producers in local and global markets. These policy conclusions run against the Washington Consensus-based recommendations that identified low inflation,

minimal fiscal deficits, trade liberalization and the availability of supply factors as necessary and sufficient conditions for long-term growth.

Many of this book's analyses and conclusions are contentious to economists trained in the mainstream approach and it will require much more empirical evidence to convince them. But, the book will certainly broaden their perspectives and, perhaps, incline some of them to question the relevance of the contributions made by the new vintage of the neoclassical approach. For instance, it would help in understanding the persistent and recurrent failure of many developing nations, characterized by conspicuous level of unemployment, informal employment and spare capacity, in their quest to enter a path of long and sustained economic growth. Hopefully, not only students, but also policymakers, will read this well-written and intellectually stimulating book.

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