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## INFRASTRUCTURE POLICY IN JAPAN

Udo Ernst S i m o n i s

### I. Introduction<sup>1</sup>

"New Economic and Social Development Plan (1970-1975)" was the title of the last medium-term and "New Comprehensive National Development Plan (1965-1985)" that of the long-term Japanese development plan.<sup>2</sup> The impressions obtained from the Innsbruck session of the German Society for Economic and Social Sciences (Verein für Socialpolitik) and the necessities of economic policy in the Federal Republic of Germany were summed up in the slogans "Investment for the year 2000" and "Prosperity - second round".<sup>3</sup> All this contained what can be described as the infrastructure problem of the market economy or the problem of social balance in industrial society.

Economic policy in Japan and Germany, as in other economies of the Western type, recently is characterized by the attempt to supplement the steering of economic activity through the market with an effective structural policy. Thereby a practical consequence is drawn from the insight that the market economy in order to reach a general economic optimum not only needs to be supplemented but that this can indeed be achieved. Yet, while the means of controlling business cycles is being effectively extended, this cannot be claimed for the sphere of structural change, and particularly on consideration of the present results and tendencies in the sphere of infrastructure.

Formulated hypothetically: the supply of public goods and political planning are far behind the production of private goods and private planning. The social spheres which allow no rational

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<sup>1</sup>I should like to thank the Institute of Developing Economies in Tokyo for providing hospitality in 1971, making it possible for me to prepare a first draft of this paper. I am also grateful for comments from Shokichi Endoh, Lesley Gansel, Reimut Jochimsen and Wolfgang Ochel.

<sup>2</sup>Published by the ECONOMIC PLANNING AGENCY, Government of Japan, in 1970 and 1969, respectively.

<sup>3</sup>Der Volkswirt/Wirtschaftswoche, No.42, 1970; Frankfurter Allgemeine Zeitung, October 7, 1970.

development privately but only publicly are in a crisis where the lack of public provisions and facilities also threatens to hamper private development. There is as yet no effective evaluation procedure examining the results of the market - in relation to specific social objectives and politically determined priorities - which would determine the social costs of profitable production decisions in the private sector and ensure that such considerations were actually carried out.<sup>1</sup> For this and other reasons even in a rapidly growing economy there is strong opposition to a substitution of private investment for more public investment.

The hypothesis of an unbalanced growth of public and private investment is one of the points of departure for this paper which has the Japanese example as its subject but will repeatedly draw on comparisons with Germany where this is possible and helpful to explain the underlying processes. The analysis is confined to the period after 1955, it concerns mainly the aggregates of infrastructure and the strategic decisions of infrastructure policy. The actual increase in infrastructure expenditure will be examined within the framework of overall economic growth and the budget and in comparison with the development of certain non-monetary economic and social indicators. The empirical findings will then be matched against relevant development theories - in so far as they explicitly include infrastructure -, in order to ascertain verification or falsification. Next follows a presentation of some recent developments which may lead to new hypotheses and also to some suggestions for alternative infrastructure policy decisions.

At first, however, the analytical limitations must be indicated: the statistical difficulties in the investigation of infrastructure are far from insignificant<sup>2</sup>; there are for Japan (as for

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<sup>1</sup>See B.FREY, Eine politische Theorie des wirtschaftlichen Wachstums, in: KYKLOS, Vol.21, 1968; S.KATTERLE, Probleme der Infrastrukturpolitik, in: WWI-Mitteilungen, Vol.24,2/3, Köln 1971.

<sup>2</sup>The unsatisfying state of infrastructure statistics is deplored in most empirical studies. See e.g. K.K.KURIHARA, The Growth Potential of the Japanese Economy, Baltimore, London 1971; H.C. RECKTENWALD, Entwicklung und Grenzen der Infrastrukturausgaben, in: R.JOCHIMSEN, U.E.SIMONIS (Eds.), Theorie und Praxis der Infrastrukturpolitik, Berlin 1970, pp.379-385, and the bibliography of the volume, pp.735-842.

Germany) a number of financial statistics and research results, but they can only be applied with reservation to theoretical questions and classifications. To extract infrastructure expenditure from the total economic accounts brings numerous problems, just as the formulation of a hypothesis on the increase in expenditure may ignore the interdependences of economic growth and government activity. Moreover, the theories or fragments of theories which try to explain government activity in the process of economic growth are often very general, not to say speculative. The danger may be particularly severe in regard to the concepts of "infrastructure" and "social balance".

## II. Infrastructure Expenditure and Economic Growth

### 1. General Observations

The infrastructure problem is not new - what is new are the terms and the size of the problem. How to distribute optimally the resources between public and private purposes is a classic question of the theory of public finance to which an early answer was found in the "principle of proportional satisfaction of public and of private needs".<sup>1</sup> Later the thesis of "private wealth and public poverty" was developed and the term "social balance" was coined, which was defined as a "satisfactory balance between the supply of the public and the private sectors of the economy".<sup>2</sup>

Thus, "proportion" or "balance" could be conceived as an optimal situation, and one worth aiming for - whereby every actual consideration is in consequence orientated to a special norm.<sup>3</sup> If this norm is fixed (only) to monetary flow figures then both the demand and supply categories in economic terms will appear to be competing for their share in the national product. As long

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<sup>1</sup>A.SCHAEFFLE, Die Grundsätze der Steuerpolitik, Tübingen 1880.

<sup>2</sup>J.K.GALBRAITH, The Affluent Society, New York 1958, p.220, passim.

<sup>3</sup>See W.MICHALSKI, Soziales Gleichgewicht in der Demokratie, in: Hamburger Jahrbuch für Wirtschafts- und Gesellschaftspolitik, Vol.6, Hamburg 1961.

as it is, furthermore, assumed that the satisfaction of needs has not yet reached saturation point<sup>1</sup>, one is faced in a static sense with the problem of distributing given resources among a number of private and public claims in such a way that as many of these claims are satisfied as possible. Stohler says concerning infrastructure planning: "The planning of infrastructure is rational when the production factors at hand at any period of time are used to realize those projects which give the community the technically greatest increase in welfare".<sup>2</sup> This "economic principle" could, however, as is to be shown all too easily lead to a defensive infrastructure policy, if the question is limited to the achievement of an optimum in the allocation of existing resources. Confined within the narrow limits of public revenue, this attempt to overcome the problems at hand can lead to a blind end: infrastructure expenditure will have a residual character.

It is, therefore, to be expected that the allocation of resources will change if the basic assumptions of the traditional concept are examined critically - if the GNP is not seen as identical with welfare, if distribution and not only growth is to come to the forefront of social interaction, if stock variables are brought into play, if the economic analysis of the "data" (Datenkranz) is also brought into consideration.<sup>3</sup>

While the differentiation between public and private goods within the framework of static theory relies on criteria which aim at indicating the state of optimal allocation, the theory of infrastructure deals above all with the dynamic consequences of the external effects of infrastructure on economic and social development.<sup>4</sup> In reality the line drawn between the concept of

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<sup>1</sup>J.K.GALBRAITH doesn't support this assumption. Instead, he believes that in the highly industrialized nations of the West the saturation point in regard to private consumer goods is or nearly is reached, the marginal utility of increased production of private goods tending to zero or being negative.

<sup>2</sup>J.STOHLER, Zur rationalen Planung der Infrastruktur, in: Konjunkturpolitik, Vol.11, Berlin 1965, p.294.

<sup>3</sup>Cf. the article by S.TSURU in this volume.

<sup>4</sup>See R.JOCHIMSEN, Theorie der Infrastruktur, Tübingen 1966.

"infrastructure" and "public goods" is blurred, not all public goods have the characteristics of infrastructure, and not all the components of the infrastructure are goods the inherent quality of which requires public production. While a public good (whether as a consumer good or as input for the production of private and/or public end products) is generally defined by the existence of non-rivalry, the concept of infrastructure is generally concerned with certain capital goods having special features ("public goods of investment character" - J.Stohler). Among these features are: long gestation and duration periods, indivisibilities, external effects, inapplicability of the exclusion principle, high investment risk, danger of regional monopoly - all of these lead to a necessity of intervention or control by the government, even in a market system. To put it in another way: infrastructure investments are investments which show the characteristics of public goods and/or for other reasons necessitate public intervention or public control.<sup>1</sup>

On the basis of such a definition the following sectors may be ascribed the term "infrastructure": traffic and communication systems; energy provision; education and research; health and environmental control provisions; water management and land conservation; communal establishments. In theoretical discussions there is no one opinion whether the government and local administration apparatus should be included in this term; this is partly so because lack of investment is indicated, and more so because there is still no satisfying economic theory of institutions. Housing is the other problem, as here no or only slight external effects are said to exist.<sup>2</sup>

The two essential characteristics of infrastructure expenditure, therefore, are the investment character of the expenditure and the public good character of its use. Both bring considerable problems, if trying to measure in statistical terms the most

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<sup>1</sup>R.MUSGRAVE, Infrastruktur und die Theorie der öffentlichen Güter, in: H.ARNOLD, D.SWATEK (Eds.), Grundfragen der Infrastrukturplanung für wachsende Wirtschaften, Berlin 1971, pp.43-45.

<sup>2</sup>A more comprehensive explanation of these problems may be found in: R.JOCHIMSEN, K.GUSTAFSSON, Infrastruktur, in: Staatslexikon, Vol.10, Freiburg 1971, and J.STOHLER, op.cit.

heterogeneous infrastructure, although the problem of satisfactorily treating investments on the one hand and government on the other in the system of national accounts has long been discussed. As yet there has been no consistent infrastructure statistic. The financial statistics have not been broken down according to the features mentioned, and the bodies responsible for infrastructure are not the same. In Germany the sectors of infrastructure are largely the responsibility of the public bodies, and the respective expenditure roughly speaking finds its deposit where expected in the statistic accounts. In contrast, in Japan not all these sectors are wholly or even partly under public control. In particular this is true for the education and traffic systems and for energy production. While, on the other hand, activities which are not covered by the aforementioned characteristics are also found in the private investment statistics, we will rely in the first instance on public investment statistics in dealing with Japanese infrastructure investment. The infrastructure concept used here must in so far as possible make allowances for the existing material. Looked at as a whole, though, the accounts should balance each other out, so that infrastructure investment may be practically equated to public investment.<sup>1</sup>

In spite of various statistical difficulties it seems to be realistic and necessary for the further discussions of the infrastructure problem, and therefore for this paper, to introduce further differentiations or categories: from a functional point of view infrastructure investment can be seen as (a) primarily enterprise oriented and (b) primarily private household oriented. Certainly, some of that which belongs to infrastructure is required by both enterprises and private households (e.g. traffic, education). Therefore a clear division between these two categories is impossible. This, however, does not invalidate the distinction in a real sense, as will become clear in the next section.

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<sup>1</sup> K.K.KURIHARA, *op.cit.*, p.44. On the concept of public investment see also the study of the EPA, *Nihon keizai no choki tenbo*, Tokyo 1960.



## 2. Infrastructure Expenditure in Japan

The Japanese economy has been unusually dynamic since the second world war and especially in the sixties.<sup>1</sup> The annual real growth rate of the Gross National Product (GNP) was on average twice as high as that of the other industrialized nations (1960-1970: Japan 11.4 %, Germany 5.2 %). In 1950 Japan was still eighth in position in the GNP world comparison, in 1968 she had moved to the third position. In 1971 Japan exceeded Germany by 20 % with a GNP of about 200 billion dollars. In contrast, if the GNP is reckoned on a per capita basis Japan is still behind; in 1972 in fourteenth position, but already in front of Italy and with about 70 % of the German level. The enormous achievement of the Japanese economy in the post-war period is confirmed by other figures too. Japan is the third greatest trading nation of the world, her share of world trade being about 8 %. Japan is among the two leading nations in the output of a series of key industrial products, we need only mention here ship-building, iron and steel, automobile and computer industries. These indicators for economic flow give the impression of an historically unparalleled rapid

Table 1: International Comparison of Capital Stock, 1968  
- Tentative Calculation -  
(1968 prices, in billions resp. hundreds of dollars)

| Category                                       | Japan | West<br>Germany | USA   |
|--|-------|-----------------|-------|
| 1. Fixed Assets                                | 237   | 300             | 1,885 |
| - Machinery and Equipment                      | 126   | 158             | 774   |
| - Social Overhead Capital                      | 111   | 142             | 1,111 |
| 2. Inventories                                 | 49    | 15              | 216   |
| 3. Total Capital Stock                         | 286   | 315             | 2,101 |
| 4. Capital Stock per capita                    | 28.3  | 54.4            | 104.5 |
| 5. Social Overhead Capital Stock<br>per capita | 11.1  | 24.3            | 55.3  |
| 6. Total Capital Stock : GNP                   | 2.02  | 2.39            | 2.43  |

SOURCE: Compiled from international statistics by Bank of Japan:  
An Outline of the Japanese Economy, Tokyo 1971, p.35.

<sup>1</sup>M.SHINOHARA, Causes and Patterns in the Postwar Growth, in: The Developing Economies, Vol.8,4, Tokyo 1970; Keizai kikaku cho, Kokumin shotoku tokei nempo, Tokyo 1971; K.BIEDA, The Structure and Operation of the Japanese Economy, Sydney, New York 1970; OECD, Economic Surveys: Japan, Paris 1972.

economic growth. On the other hand, if stock variables are compared, Japan still lags considerably behind other advanced industrial nations. A (preliminary) international comparison of private and social stock indicates this more than the flow figures would lead one to expect.

Table 1 shows that in Japan in 1968, when the GNP of Germany had already been surpassed, the total capital stock was about 90 %, and the stock of social overhead capital alone only about 77 %. On the per capita basis, the total stock in Japan was about 52 % and the stock of social capital alone about 46 % of that in Germany. In particular, the relatively low provision of infrastructure capital in Japan is apparent.<sup>1</sup> This complex will be looked at more closely in the following pages.

Table 2: Public Investment, National Product, Government Expenditure in Japan  
(current prices, 100 million Yen, fiscal year)

| Year | Public Investment | Gross National Product | National Income | Infrastructure Quota (1:2) | Government Expenditure : 3 | Tax Quota |
|------|-------------------|------------------------|-----------------|----------------------------|----------------------------|-----------|
|      | 1                 | 2                      | 3               | 4                          | 5                          | 6         |
| 1955 | 5,579             | 88,646                 | 72,985          | 6.3                        | 23.5                       | 18.1      |
| 1956 | 6,199             | 99,509                 | 81,734          | 6.2                        | 22.0                       | 18.8      |
| 1957 | 7,687             | 112,489                | 93,547          | 6.8                        | 21.5                       | 18.5      |
| 1958 | 8,654             | 117,850                | 96,161          | 7.3                        | 23.0                       | 18.0      |
| 1959 | 10,378            | 136,089                | 110,233         | 7.6                        | 22.1                       | 18.0      |
| 1960 | 12,200            | 162,070                | 132,691         | 7.5                        | 21.5                       | 19.2      |
| 1961 | 16,410            | 198,528                | 157,551         | 8.3                        | 22.0                       | 19.9      |
| 1962 | 20,889            | 216,595                | 177,298         | 9.5                        | 23.9                       | 19.4      |
| 1963 | 23,676            | 255,759                | 206,072         | 9.3                        | 24.0                       | 19.1      |
| 1964 | 25,762            | 295,305                | 233,293         | 8.7                        | 23.8                       | 19.5      |
| 1965 | 30,200            | 326,504                | 259,774         | 9.2                        | 24.1                       | 18.6      |
| 1966 | 35,294            | 381,179                | 303,264         | 9.3                        | 24.4                       | 17.9      |
| 1967 | 39,791            | 448,015                | 359,139         | 8.9                        | 23.6                       | 18.3      |
| 1968 | 45,505            | 527,882                | 424,670         | 8.6                        | 23.4                       | 18.8      |
| 1969 | 50,620            | 624,333                | 493,193         | 8.1                        | 23.6                       | 18.8      |

SOURCES: Keizai kikaku cho, chosa kyoku hen, Keizai yoran, Tokyo 1971; BANK OF JAPAN, Economic Statistics Annual, Tokyo 1971; OFFICE OF THE PRIME MINISTER, Japan Statistical Yearbook, Tokyo 1971.

Compiling the quota on the 1965 price basis gives slightly different results, yet the trend is not touched.

<sup>1</sup>"A significant lag exists compared with other countries in the field of infrastructure. Although the level of consumption is

Table 2 shows how Japanese infrastructure expenditure in the years since 1955 has developed within the framework of (a) economic growth, measured by the GNP, and of (b) government expenditure. When the share of the infrastructure in the GNP is examined, apart from the first three years of this period, only a slight rise can be seen, broken by two short-term jumps at the beginning of the ten year plan period in the early sixties and the recession of 1965-1966. As a whole the expenditure on infrastructure does not rise above 9 per cent of the GNP for any length of time - in spite of contrary predictions and corresponding political declarations in the government White Papers and plans.<sup>1</sup> Comparing this development with Germany we find a similar relationship. Here the infrastructure quota rose from 8.2 per cent (1962) to 9.2 per cent (1964) and remained at this level until 1966, after which a slower rise followed of up to 1.5 percentage points till 1971.<sup>2</sup>

A somewhat different picture is given with the significance of infrastructure expenditure in the total budget. After 1955 there was a rapid increase here to oscillations on a relatively high level (about 46 %). The figures for Germany taken in comparison, an increase from 25.5 % (1962) to 28.5 % (1966) can be seen and thereafter a continuous slight rise up to 33 % (1971) only. Behind this lies the comparatively high ratio of wages, social security, and, in particular, the defence burden in the German budget.

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much higher than in the pre-war period, we Japanese are prisoners of a new feeling of poverty ...": K.OKOCHI, *Entwicklungstendenzen der japanischen Wirtschaft nach dem zweiten Weltkrieg*, in: K.HAX, W.KRAUS (Eds.), *Industriegesellschaften im Wandel. Japan und die BRD*, Düsseldorf 1970, p.15 (translation).

<sup>1</sup>Cf. Keizai kikaku cho, Keizai hakusho, Tokyo 1960 following; and the six medium-term plans since 1955. See also S.LÖRCHER, *Wirtschaftsplanung in Japan 1955-1969. Ein Beitrag zur Theorie staatlicher Makroplanung*, Göppingen 1971, and the contribution of K.BIEDA in this volume.

<sup>2</sup>All the figures for West Germany in: *Statistisches Jahrbuch der Bundesrepublik Deutschland*, Stuttgart, Mainz 1972, and D. SCHRÖDER, *Die Größenordnung der öffentlichen Ausgaben für die Infrastruktur in der BRD bis 1985*, in: R.JOCHIMSEN, U.E.SIMONIS (Eds.), *Theorie und Praxis der Infrastrukturpolitik*, op.cit., p.427-439. (The infrastructure quota calculated by Schröder does not include public subsidies for housing investment, which amounts in average to 1.7 % of GNP.)

Lastly, when the share of the total government expenditure in Japan's national product is considered, one finds, as expected, low quotas. On the basis of the GNP, public expenditure in 1955 was only 19.3 % and in 1971 18.9 %, which is an exceptionally low figure when compared internationally; for example, the figure for Germany was about 32 % (1971). It is remarkable that in Japan no clear tendency to rise was at hand. Reckoning on the basis of the net national product at factor costs (national income), the public expenditure quota for Japan for the whole period of observation lies on average at 23.5 %. - To complete the picture let us add the tax quota (tax receipts in national income) which in Japan has remained essentially unchanged for fifteen years at about 18 % (Germany about 30 %).

As a preliminary conclusion we may notice: Japanese public expenditure has increased rapidly since 1955, yet compared with the national product its share has remained basically constant; the tax quota has not visibly risen; a slight increase can be found in the gross investment in infrastructure in relation to the GNP, but this is essentially limited to the first third of the observation period; on the other hand it is worth stating the high share of infrastructure expenditure in the total public expenditure of Japan.

In order to test in more detail the arguments put forward at the beginning, we must now add some differentiations, in particular with regard not only to private investment, but also the "structure of the infrastructure". Of special consequence for the question of Social Balance is the relationship between public and private investment and how this has changed in the course of time, i.e. the 'competition' between government and private enterprise for the total savings in the economy. To the extent that one can work on the general assumption that investment determines output of the economy, this apportionment gives some first indications on the distribution of benefits and the degree of satisfaction of needs with regard to public and private goods and, furthermore, on the long-term integration and development potential of the economy.<sup>1</sup>

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<sup>1</sup>See G.BOMBACH, Konsum oder Investitionen für die Zukunft, Dok. 12-72, 4.Internationale Arbeitstagung der IG-Metall on: "Quality of Life: Challenge of the Future", Oberhausen 1972, mimeo; R.JOCHIMSEN, Theorie der Infrastruktur, op.cit.

**Table 3: Public Investment and Private Investment in Japan**  
(current prices, 100 million Yen, fiscal year)

| Year | Public Investment | Private Investment | 1:2  |
|------|-------------------|--------------------|------|
|      | 1                 | 2                  | 3    |
| 1955 | 5,579             | 12,205             | 45.7 |
| 1956 | 6,199             | 18,337             | 33.8 |
| 1957 | 7,687             | 22,403             | 34.3 |
| 1958 | 8,654             | 21,410             | 40.4 |
| 1959 | 10,378            | 27,280             | 38.1 |
| 1960 | 12,200            | 38,279             | 31.9 |
| 1961 | 16,410            | 50,468             | 32.5 |
| 1962 | 20,889            | 51,767             | 40.4 |
| 1963 | 23,676            | 59,232             | 39.9 |
| 1964 | 25,762            | 70,356             | 36.6 |
| 1965 | 30,200            | 68,956             | 43.8 |
| 1966 | 35,294            | 84,677             | 41.7 |
| 1967 | 39,791            | 108,815            | 36.6 |
| 1968 | 45,505            | 133,886            | 33.9 |
| 1969 | 50,620            | 171,891            | 29.6 |

SOURCE: Same as in table 2.

Table 3 shows that the relationship between public infrastructure and private fixed investment in the period of observation in Japan has altered clearly in favour of private investment and against public investment activity. The share of the latter fell from about 46 % (1955) to just 30 % (1969), with short revivals at the beginning and in the middle of the sixties and in the early seventies, the average rate of growth of private investment considerably exceeding that of public investment.

Before trying to evaluate these empirical findings, and in particular to interpret how far in this way a divergence from social balance is indicated, the structure of public infrastructure investment itself must first be examined more closely. The division into primarily private household-oriented and primarily enterprise-oriented infrastructure was earlier said to be meaningful, even if - because of the multiplicity of use of infrastructure - this division is not "waterproof".

A similar concept has been used in Japanese planning literature - which coined the terms "living environment" or "social overhead capital directly related to the people's living" to draw the line to other social capital or other infrastructure investment.<sup>1</sup>

<sup>1</sup>Keizai kikaku cho, kokumin seikatsu hakusho, Tokyo 1969; EPA, Economic Survey of Japan, Tokyo 1971.

Table 4: Structure of Public Investment in Japan  
(1,000 million Yen, fiscal year)

| Sectors                                  | Investment 1961-65<br>(current prices) (%) | Investment 1964-69<br>(current prices) (%) | Planned Investment 1970-75<br>(1969 prices) (%) |
|--|--|--|---|
| <u>A. Household-oriented Investment</u>  | 2,033                                      | 4,302                                      | 10,700  |
| Components:                              |  |  |   |
| 1. Housing                               | 494  | 1,201                                      | 3,900   |
| 2. Environmental Sanitation              | 430  | 995  | 3,140   |
| 3. Welfare                               | 262  | 537  | 1,040   |
| 4. Education                             | 847  | 1,569                                      | 2,620   |
|  | 15.2                                       | 16.9                                       | 19.4  |
|  | 3.7  | 4.7  | 7.1   |
|  | 3.2  | 3.9  | 5.7   |
|  | 1.9  | 2.1  | 1.9   |
|  | 6.3  | 6.2  | 4.8   |
| <u>B. Enterprise-oriented Investment</u> | 11,405                                     | 21,162                                     | 44,300  |
| Components:                              |  |  |   |
| 1. Roads                                 | 2,650                                      | 5,544                                      | 11,700  |
| 2. Harbours                              | 329  | 659  | 1,900   |
| 3. Aviation                              | -  | 80   | 590   |
| 4. Land Conservation                     | 765  | 1,537                                      | 3,700   |
| 5. Agriculture, Forestry, Fishery        | 681  | 1,443                                      | 3,250   |
| 6. Railways                              | 1,595                                      | 2,802                                      | 5,500   |
| 7. Telecommunication                     | 1,305                                      | 2,656                                      | 5,320   |
| 8. Others                                | 4,170                                      | 6,441                                      | 12,340  |
|  | 84.8                                       | 83.1                                       | 80.6  |
|  | 19.7                                       | 21.7                                       | 21.3  |
|  | 2.4  | 2.6  | 3.5   |
|  | -  | 0.3  | 1.1   |
|  | 5.7  | 6.1  | 6.7   |
|  | 5.1  | 5.7  | 5.9   |
|  | 11.9                                       | 11.0                                       | 10.0  |
|  | 9.7  | 10.4                                       | 9.7   |
|  | 31.1                                       | 25.3                                       | 22.4  |
| <u>C. Total Investment</u>               | 13,438                                     | 25,464                                     | 55,000  |
|  | 100.0                                      | 100.0                                      | 100.0   |

SOURCES: Economic Planning Agency (EPA), Economic and Social Development Plan, 1967-71; New Economic and Social Development Plan, 1970-75, Tokyo 1967, 1970.

This division of public investment is used in table 4 und table 5.

It is to be seen that in the last decade there has been a very slight rise in the share of private household-oriented investment ("social overhead capital directly related to the people's living") in total public investment. This has been from 15.2 % (on average for 1961-1965) to 16.9 % (for 1964-1969) at current prices. A further rise to 17.4 % was expected (in prices of 1965) for the five year period ending with the fiscal year 1971. A share of an average 19.4 % (in 1969 prices) is envisaged for the planning period of 1970-1975, with total public expenditure of 55 trillion Yen (and of probably 180 trillion Yen for the period 1971-1980).<sup>1</sup>

Nevertheless, the rise in the share of primarily household-oriented infrastructure achieved in the past decade (just two percentual points) cannot conceal that its level is extremely low, i.e. primarily enterprise-oriented infrastructure has been till now clearly in the forefront of Japanese economic policies. Infrastructure investment was carried out mainly in those sectors which were considered important for industrial expansion, while those determining in a very real sense the "quality of life", such as housing, hospitals, schools, sanitation and environmental protection, were qualitatively and quantitatively neglected. "Japan, aiming at rapid growth, has earmarked the fruit of annual growth primarily for the expansion of productive capacity and international competitive capability. This has necessarily curtailed ... those resources which could be set aside for the expansion of capital related to the people's life ... and partially explains why there still remains a feeling of dissatisfaction ... in spite of the expansion of the Japanese economy in the sphere of 'flow'."<sup>2</sup> (In Germany the share of primarily private household-oriented investment is on estimate about 40 % of total infrastructure investment.)

We already drew attention to the methodological difficulties in making a clear distinction between the two categories of public

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<sup>1</sup>EPA, New Economic and Social Development Plan, op.cit.; Finanz und Wirtschaft, No.44, 1971.

<sup>2</sup>EPA, Economic Survey of Japan, Tokyo 1971, p.72.

Table 5: "Standard of Living" Indices, Japan, Germany, USA

|  | Japan<br>1966<br>(1960=100) | Japan<br>1955-66<br>annual aver-<br>age growth<br>rate | Japan<br>(highest level country=100)<br>1965 | West<br>Germany | USA   |
|--|-----------------------------|--|--|-----------------|-------|
| <b>A. Overall Index of the Individual 'Standard of Living'</b> | 136,2                       | 5,3  | 67,8   | 86,7            | 100,0 |
| Components:  |                             |  |  |                 |       |
| 1. Nutrition   | 119,6                       | 2,7  | 54,9   | 90,9            | 100,0 |
| 2. Health  | 129,0                       | 3,6  | 82,5   | 72,6            | 70,9  |
| 3. Education   | 145,7                       | 4,9  | 50,8   | 33,2            | 100,0 |
| 4. Leisure and Recreation                                      | 254,8                       | 23,3   | 19,7   | 43,4            | 100,0 |
| 5. Housing   | 108,9                       | 1,7  | 61,8   | 70,4            | 87,5  |
| 6. Safety  | 111,3                       | 1,4  | 67,1   | 50,5            | 39,1  |
| 7. Social Security   | 125,5                       | 1,2  | 32,0   | 100,0           | 38,0  |
| <b>B. Overall Index of the Social 'Standard of Living'</b>     | 132,7                       | 4,4  | 44,0   | 88,0            | 97,2  |
| Components:  |                             |  |  |                 |       |
| 1. Environmental Sanitation                                    | 140,4                       | 6,6  | 33,2   | 88,9            | 95,1  |
| 2. Social Welfare  | 122,2                       | 3,1  | -  | -               | -     |
| 3. Education   | 102,8                       | 0,4  | 60,2   | 61,2            | 67,8  |
| 4. Leisure and Recreation                                      | 151,0                       | 7,0  | 7,7  | 46,3            | 100,0 |
| 5. Communication   | 174,9                       | 7,9  | 39,6   | 54,2            | 74,8  |
| 6. Transportation  | 156,8                       | 5,6  | 25,4   | 78,7            | 42,2  |
| 7. Prevention of Accidents                                     | 110,4                       | 1,0  | 60,2   | 83,1            | 100,0 |
| 8. Public Health   | 119,5                       | 3,5  | 54,7   | 72,4            | 63,3  |
| <b>C. Gross National Product</b>                               | 177,2                       | 10,1   | -  | -               | 100,0 |



SOURCES: Keizai kikaku cho, Kokumin seikatsu hakusho, Tokyo 1969; Japan Institute of International Affairs, White Papers of Japan, Tokyo 1971; Keizai kikaku cho, Keizai hakusho, Tokyo 1971.

NOTE: The component indices have been compiled by geometric averages of the individual indices mentioned below. The overall indices are the geometric averages of the component indices.

- A-1 Nutrition: Total intake of calories per person per day, intake of protein, fat, percentage of calories derived from elements other than cereals to the total intake of calories.
- 2 Health: Infant mortality, average life span (male).
- 3 Education: Enrolment ratio for upper secondary education for higher education.
- 4 Leisure and recreation: Non-working hours per day (in industry), number of motor vehicles per population, number of television sets per family, number of overseas tourists per population.
- 5 Housing: Number of rooms per occupied homes, number of rooms per person.
- 6 Safety: Incidence of violent deaths per population, incidence of homicides per population.
- 7 Social security: Ratio of payments of the government social security schemes to national income.
- B-1 Environmental sanitation: Diffusion rate of piped water supply, diffusion rate of public sewer systems.
- 2 Social welfare: Rate of accommodations of welfare facilities per population, number of employees at such facilities per facility accommodation.
- 3 Education: Number of primary school teachers per pupil, number of teachers at junior colleges and universities per student.
- 4 Leisure and recreation: Number of books in public libraries and area of public parks (both per population).
- 5 Communication: Number of telephones per population, number of postal services personnel per population.
- 6 Transportation: Number of railway passenger cars (per population), extension of paved roads (per number of motor vehicles), ratio of paved roads.
- 7 Prevention of accidents: Number of policemen and number of firemen (both per population).
- 8 Public health and sanitation: Number of doctors, number of nurses, number of hospital beds (all per population).

investment which lie behind these observations. For this reason, another approach will be used as corroboration, in which stock and flow variables, quantitative and qualitative characteristics of economic activity are simultaneously considered - firstly in the shape of a broadened index concerning the "living standard" in Japan between 1955 and 1966, and then with a corresponding international comparison in a somewhat differing form for 1970-1971. In these indices many value judgments are included the relevance of which is debatable, particularly what concerns the international comparison. However, it is worth reflecting that indicators of this type are under certain conditions suited to convey a substantive rationality (K.W.Kapp), in that they may turn the attention to the degree of actual fulfilment of specific basic needs (and also levels of expectation) and can thereby have marked advantages over seemingly formal criteria such as market prices and GNP.<sup>1</sup> This approach seems methodologically highly interesting and for practical purposes most relevant. It clearly shows a substantial divergency between the definition of "living standard" used here and the usual definition (based on the traditional national accounts): this broadened index of the "living standard" in Japan has risen only half as fast as the GNP, i.e. while the index of GNP was 177.2 in 1966 (1960=100), the Overall Index of the Individual Standard of Living (A) was 136.2, and the Overall Index of the Social Standard of Living (B) was 132.7.

This survey is closed with a few further details. The fact that in the post-war period public investment has been overshadowed by private investment is also reflected by the rapid population migration from the countryside to the urban centres. Push and pull factors encouraged this urbanization process. The high regional concentration of population made high economies of scale possible for industry, but also exhausted rapidly the capacity of the urban infrastructure or made its failings apparent. Rapid economic growth, extreme spatial concentration of economic activities, and infrastructure lagging behind, are decisive factors

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<sup>1</sup>K.W.KAPP, Economic Development in a New Perspective: Existential Minima and Substantive Rationality, in: KYKLOS, Vol.18, 1965.

for creating and intensifying environmental disruptions.<sup>1</sup>

We cannot consider here more closely the social costs of lacking infrastructure and its regional dispersion, yet it should be mentioned that the regional distribution of social capital stock in Japan is extremely unbalanced. On estimate 61 % are concentrated in Central Japan, 27 % in the North-East, and 12 % in the South-West. During the sixties more than 70 % of public investment was along the Pacific coast. About 50 % of the Japanese population lives today in highly populated urban areas (DID areas); according to the long-term development plan by 1985 it should be more than 70 %, or 84 million.<sup>2</sup> The number of private cars in this period should rise from 5 million to 25-30 million. The costs for land which in 1955 counted for about 10 % of the total costs for infrastructure investment, have in the meantime reached an average of 25 %; their share in the sector of traffic and communication frequently rises to more than 50 %.<sup>3</sup> In the 23 districts of Tokyo the population density is about 16,500 inhabitants per square kilometer, with a high correlation between environmental damage and low income areas. The number of cars had risen here by 450 % in the ten years after 1958, the number of road kilometers by 6 %. Traffic jams are frequent, the average car speed is estimated at 17 kilometers an hour, about as fast as

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<sup>1</sup>Cf. S.TSURU (Ed.), A Challenge to Social Scientists. Proceedings of International Symposium on Environmental Disruption, Tokyo 1970; U.E.SIMONIS, Environmental Disruption: Implications for Economic Planning, in: The Developing Economies, Vol.10,1, Tokyo 1972; Umweltschutz und Wirtschaftswachstum, edited by M.P. von WALTERSKIRCHEN, München, Bern, Wien 1972.

<sup>2</sup>EPA, New Comprehensive National Development Plan, 1965-85, op. cit.

<sup>3</sup>Cf. Tokyo Fights Pollution. An Urgent Appeal for Reform, Tokyo 1971. According to this report, between 1955 and 1966 land prices in Tokyo had risen more than 10 times, while income per capita had risen more than 3 times, and the prices for consumer goods 1.5 times. According to the last Census, the average dwelling space per inhabitant in Tokyo was 6.78 m<sup>2</sup>, the floor space per dwelling unit 22 m<sup>2</sup> (1970). The cost of subway construction per km is higher than 30 million dollars, therefore the amount of subway loans issued is so high that the yearly interest paid is in the range of total revenue from the tickets sold. The diffusion rate of the public sewer system in Tokyo is about 35 % with a high elasticity of costs: more than 3 million dollars per one percent of diffusion rate increase.

a man on a bicycle. The obvious symptoms in the built-up areas: the divergence between the growth rates of consumer goods and of waste disposal, of cars and of public transport, of density of housing and of fire prevention, of environmental pollution and of precautions against it.

On this theme a report on Tokyo says: "As the concentration of industry and population in Tokyo grew, the capital's facilities to handle the needs of industry and its citizens became inadequate ..., capital spending was focussed on projects to provide a base for industrial growth. Capital for housing and environmental development was left to the last."<sup>1</sup> (That in the cities of Germany similar problems exist is indicated by the theme for the conference of the German Cities Council (Deutscher Städte-tag) in 1971 - "Save our cities now!"<sup>2</sup>). Comparing the expenditure for household-oriented infrastructure with those for enterprise-oriented infrastructure in Tokyo, a highly unbalanced picture emerges.<sup>3</sup>

<sup>1</sup>Sizing Up Tokyo. A Report on Tokyo under the Administration of Governor Ryokichi Minobe, Tokyo 1969, p.49. The underlying vicious circle is described as follows: "The basic cause for most of Tokyo's ills is the indiscriminate concentration of industry and population. This over-concentration creates demand for land which causes land prices to skyrocket beyond the reach of all but the wealthiest. The concentration of factories produces air pollution, water contamination and other public nuisances. An over-crowded population leads to over-crowded roads, traffic jams, and a severe drop in the efficiency of traffic" (p.101). It may be added here that the total costs of a car in Tokyo in the 2,000 dollar-range (private purchase-money) have been estimated to reach 6,000 dollars (private and social costs).

<sup>2</sup>"Our system promotes with all its strength private motorization - but we are lamenting on traffic jams, air pollution, and ten thousands of heavy traffic casualties. Our system promotes land speculation in an unlimited way - but we are shedding crocodile tears on the deserted city, the weakened investing power of the communities, and on exploding rents. Our system is inclined to hold every private investment for being productive and almost every public investment for being unproductive - and we all are wondering on the results of such a philosophy": H.J.VOGEL, Rettet unsere Städte jetzt! In: Neue Schriften des Deutschen Städte-tages, Vol.28, Köln 1971, p.77 (translation).

<sup>3</sup>According to the Medium-Term Development Plan of Tokyo, 1971-73, about 27 % of total expenditure are to be spent on traffic and transportation, 21.6 % on environmental sanitation. Cf. Tokyo Municipal News, Vol.21, No.3, 1971.

## III. Development Theories and Infrastructure Policy in Japan

Development theories and theses usually work from the basis of capital and the economic character of public goods to explain the behavior of infrastructure expenditure and total government expenditure. Such approaches in their application to the hard facts of a special case often prove to be too general (and thereby indicate the necessity of splitting infrastructure expenditure into various types) if we are to try to pin-down the actual deviations from social balance, i.e. to recognize and measure the under-supply or over-supply of infrastructure. Yet, some of these theoretical findings should now be tested and looked at more closely, whereby the limitations given by the relatively short period of observation should not be ignored.

The stages of growth theory differentiates between several stages of growth running from a pre-industrial stage to full economic maturity.<sup>1</sup> Regarding the infrastructure it is argued roughly as follows: (1) in the "pre-industrial period" the state and public investment is generally acknowledged as having a predominant rôle over private investment projects because of relatively small private savings, high capital-output ratio, etc.; (2) in the periods of "industrial development" the responsibility for the growth process is more or less reversed (the capital-output ratio being low, the Engel-Schwab law is thought to apply even to public goods) so that infrastructure expenditure loses significance in relation to total investment, and private investment becomes more important for economic progress; (3) in the "stage of maturity", finally, infrastructure regains critical significance "... when the level of economic activity has risen considerably but the degree of integration of the economy nevertheless stagnates or even decreases because infrastructure investment has not kept pace".<sup>2</sup>

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<sup>1</sup>Cf. W.W.ROSTOW, *The Stages of Economic Growth*, Cambridge, Mass. 1960. See also two empirical studies which have broken down Japanese economic history into phases bearing a family relation to Rostow's 'stages of growth': K.OHKAWA, H.ROSOVSKY, *A Century of Japanese Economic Growth*, in: W.W.LOCKWOOD (Ed.), *The State and Economic Enterprise in Japan*, Princeton, N.J. 1965; Y.SHIONOYA, *Patterns of Industrial Development*, in: L.KLEIN, K.OHKAWA (Eds.), *Economic Growth. The Japanese Experience since the Meiji Era*, Homewood, Ill. 1968.

<sup>2</sup>R.JOCHIMSEN, *Theorie der Infrastruktur*, op.cit., p.220 (where "degree of integration" means the degree of equity of factor income for comparable factor inputs).

According to such reasoning, infrastructure policy decisions become first really problematical when the "level has risen", when the "age of mass consumption" or the "stage of maturity" is achieved. The empirical question which then presents itself is whether the transition from one stage of growth to the other has been actually achieved or not - for the Japanese example, whether the transition to the stage of maturity has taken place or not. This question may remain open for now, but so much seems to be certain: the infrastructure problem in general, and the Japanese infrastructure problem in particular, cannot be solved by such a priori reasoning: in the stage of "industrial development" the economic process according to this theory is carried here mainly by private investment, and active measures of infrastructure policy which could influence it are to be avoided or are simply unnecessary. The low infrastructure quota and the falling share of public investment in total investment in Japan would then be of logical consequence. This means that as long as this concept (the general theory of definite stages of growth) dominates argumentation, there will be no requisite point of departure from which to advance to a full understanding of the infrastructure problem or to begin to find adequate solutions for it.<sup>1</sup>

In the following, some further and partly contradictory theoretical statements which could be of some significance will be examined. The actually increasing volume of government expenditure is often traced back to "Wagner's Law of the Growing Expansion of State Activity".<sup>2</sup> Assuming that there is no such a law in the sense of a "law of nature" but at the very most a general and controllable tendency only, then even this will not be confirmed by the Japanese example as a whole in relation to GNP or national income - at least not for the period under consideration. Also the hypothesis of an irreversible "displacement effect" (Peacock-Wiseman) in public expenditure finds no convincing confirmation. However, the second central supposition of Wagner, namely the argument of the productivity and Eigenwert of state activity, is in this way not contradicted. This question will be dealt with later.

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<sup>1</sup>See W. GLASTETTER, *Wachstumskonzeption und Politische Ökonomie*, Köln 1971, p.87.

<sup>2</sup>Cf. H.C. RECKTENWALD, *op.cit.*

In this connection a further argument is interesting, whereby public expenditure which can be substituted by private investment in a market economy will increase less rapidly than the national product. The facts on the Japanese situation given above allow one to suppose that this argument may be correct, but they do not prove it, because the statistical material is not detailed accordingly, and also because this substitution is itself in all probability dependent on special institutional and organizational arrangements. In other words: the question of optimal degree of expansion or reduction of public infrastructure investment cannot be answered once and for all. This the more so since there is no one opinion in Japan (and many other countries) as to what needs to be undertaken publically and what privately.

More important for an explanation of the Japanese example than the aforementioned theories and hypotheses could be to draw upon the Theory of Efficient Investment Sequences<sup>1</sup> and especially upon the Strategy of Unbalanced Growth which seems to be of immediate practical relevancy not only for the developing countries (as many economists do believe) but for an industrialized country like Japan as well. The preference for unbalanced economic growth and particularly for a "development via shortage of social overhead capital" propagated by Hirschman and others has obviously fallen on fruitful soil with many practical politicians and planners.<sup>2</sup> In particular it seems to be the following train of thought which was rapidly caught on: "Would it not be less risky and more economical first to make sure of such Direct Productive Activity ... and then let the ensuing pressures determine the appropriate outlays for Social Overhead Capital and its location?", and, furthermore: "... the limits to such a policy are set by technological factors ..." <sup>3</sup> This was also the strategic concept of the Japa-

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<sup>1</sup>A.O.HIRSCHMAN, *The Strategy of Economic Development*, New Haven 1958, esp. chapter 4 and 5.

<sup>2</sup>That Japan had exactly behaved according to theory, this was confirmed to the author by many Japanese scholars and emphasized by many civil servants.

<sup>3</sup>A.O.HIRSCHMAN, *op.cit.*, pp.93-94 (my italics).

nese economic policies in the fifties and sixties.<sup>1</sup> The empirical findings do confirm this beyond any doubt.

Hirschman does not conceal that it might be possible to come to quite different conclusions, namely to recommend a Strategy of Balanced Growth: "... when the community has acquired the foresight and confidence in further growth ..., the point of balanced growth may also be the point of maximum inducement of further investment. Under these conditions, balanced growth would therefore be desirable not only from the static but also from the dynamic point of view ..."<sup>2</sup> Hirschman considers this last scheme as only possible in an "advanced type of economy". Thus, this also fails to offer, as with the stages of growth theory, a clear and compelling starting point for an active infrastructure policy and policy of social balance. A starting point for action on the basis of this theoretical concept can only be gained from the insight that there is "... a point where DPA output can only be increased if SOC is expanded"<sup>3</sup>, a point at which social marginal productivity of additional private investment is zero or negative. Yet, this general "level below which" of infrastructure expenditure is in reality either very flexible (the level of expectation is low and the political planning mechanism does not work)<sup>4</sup>, or the specific structure of public investment is more interesting for private production than the aggregate level that finds its expression in the infra-

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<sup>1</sup>HIRSCHMAN assumes that the basic economic problem is not the question of resources but the ability to use them. He further believes that in most cases SOC and DPA cannot be expanded simultaneously, so that the sequence of investments should be favored in a way leading to a maximum of induced investments. He concludes that this may best be achieved either by "development via shortage of SOC" or by "development via excess capacity of SOC" and that in practice, the "... evaluation of their respective 'efficiency' depends on the strength of entrepreneurial motivations on the one hand and on the response to public pressure of the authorities responsible for SOC on the other", *ibid.*, p.88.

<sup>2</sup>*Ibid.*, p.92 (my italics).

<sup>3</sup>*Ibid.*, p.96.

<sup>4</sup>HIRSCHMAN believes that "development via shortage of SOC" cannot be condemned "... solely on the ground that, if overdone, it may lead to stagnation ...", and optimistically he adds that "... it will do so only in a community whose behavior has become thoroughly irrational": *ibid.*, p.97.



structure quota as such.

R.L.Frey made a proposal<sup>1</sup> to extend the traditional flow-of-product approach: Resources can be used for goods produced and consumed in the same period (C), for consumptive investment (Konsumtivinvestitionen) that leads to a flow of benefits (Nutzenstrom) in the future, but does not necessarily enlarge the production capacity of the economy (Ik), and for productive investment (Produktivinvestitionen) which leads to an enlargement of the production capacity in the future but is not directly consumed (Ip) - whereby infrastructure investment can belong to the second (= Iki) and the third category (= Ipi). The relevancy of this approach would be confirmed by the Japanese example, but also the necessity to use it creatively towards social balance. This means that other investment criteria must be applied to Iki than to Ipi or to private investment.

The above division into primarily enterprise-oriented and primarily household-oriented infrastructure investment, which comes close to R.L.Frey's approach, shows that in Japan, with an infrastructure quota still being quite low, investment mainly flows into the sector of enterprise-oriented infrastructure (or Ipi in Freys model) - with the consequence that household-oriented infrastructure (or Iki) is largely neglected. Disaggregated in this way it becomes clear that public investment rising rapidly in absolute terms - and lightly, measured against the GNP - can go hand in hand with serious structural shortcomings. In other words: not only the level of infrastructure (the infrastructure quota) but also its structural pattern has to be brought to an optimum.

Of course, investment strategies favoring enterprise-oriented infrastructure (or Ipi) are not only to be found in Japan but in other countries as well. To cite from the regional action program (Regionales Förderungsprogramm) of the German government: "In

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<sup>1</sup>R.L.FREY, Infrastruktur. Grundlagen der Planung öffentlicher Investitionen, Tübingen 1970, p.38. Yet, FREY subsequently limits this approach when saying that "it doesn't make much sense to put too many resources into consumptive investment", and: "from the highest possible expansion of direct productive activities the limitations may be derived within which infrastructure productive investment (Infrastrukturproduktivinvestitionen) and infrastructure consumptive investment (Infrastrukturkonsumtivinvestitionen) makes sense", pp.38-39 (translation).

view of the shortage of means ... only such infrastructure projects are to be undertaken as seem particularly suited to support commercial expansion".<sup>1</sup> It would be hard to distort more thoroughly one of the crucial problems of modern society.<sup>2</sup> This gives us the point of departure for the concluding chapter.

#### IV. Towards a Political Economy of Infrastructure

A universally accepted goal of economic policy is to increase the welfare of society. Politicians (and economists) all too often simplify the policy problem involved by equating welfare with GNP, or the production of private consumer goods, so that GNP and private investment become the focal points and central criteria for judging economic process and social success. One of the results of such a simplification is that the nature of the infrastructure problem itself cannot be adequately analyzed or observed closely enough in practice, since the traditional concept of national accounts already has substantial weak points and discrepancies when taken as a welfare measure. There is, among others, the problem of social costs of private enterprise, the inadequate valuation of public goods, the question of evaluating leisure.<sup>3</sup>

Regarding our subject, all those infrastructural goods having no adequate prices, which are supplied free of charge or do not flow into production, will be underestimated in their actual social value and be relatively neglected by practical policy. This signifies that the infrastructure problem and the problem of social

<sup>1</sup>W.ALBERT, Zielgewinnung und Entscheidungsfindung für Infrastrukturprogramme. Das Beispiel des Regionalen Förderungsprogramms der Bundesregierung, in: Theorie und Praxis, op.cit., p.247.

<sup>2</sup>For the developing countries W.F.Stolper states, unconcerned by all the infrastructure problems and environmental disruptions in the industrially advanced countries, that, first, as much capital as possible should flow into DPA, that, secondly, those public investments being indispensable for the functioning of DPA should be realized. Only the rest should then be used for social infrastructure: W.F.STOLPER, Planungsprobleme der wirtschaftlichen Entwicklung, in: KYKLOS, Vol.20, 1967, p.848 and 881.

<sup>3</sup>Cf. E.J.MISHAN, The Costs of Economic Growth, London 1969; A.RUBNER, Three Sacred Cows of Economics, London 1971.

balance actually arise or are at least reinforced in their concrete form through a specifically narrow economic concept. The demand for an increase in welfare based on such a concept may, therefore, lead to internal contradictions. We will examine this more closely using the Japanese example<sup>1</sup>, whereby first we are confronted with the question why an under-supply of infrastructural goods is to be found at all.

The established infrastructure theory suggests a series of explanations<sup>2</sup>: the neglect of infrastructure investment is mostly noticed after a time gap, since no direct connection exists between what has actually been done and the number of those benefitted (or suffering), i.e. there is a 'deficiency of signals' helping to perceive an increasing under-supply. This is in some way reinforced by the fact that the benefits (or costs) of infrastructure projects mainly accrue to others than to the decision-makers responsible for investment. The lag in reaction and the long gestation and life period delay the elimination of imbalances once they are created. Furthermore, the capacity of infrastructure projects mostly is quite flexible, overloading is possible so that the quality of what is provided decreases as the demand rises. Quite typical is a substitution between quality and quantity, which can at the same time lead to a displacement of costs (or damages) from the government (which saves money by doing nothing) to private individuals (loss of welfare via inadequate infrastructure). Also, indivisibilities may lead to an excess of demand before the start of use of a new infrastructure facility (e.g. motorway) and to an excess of supply afterwards. Particular problems in anticipatory planning of infrastructure can indeed be seen in that the need shows no objective size and that the dimensions of the projects may alter the cost-price relations in the economy more than just marginally. It is true that the national product and the size of population are in every case factors determining quantitative demand, but this can be satisfied with quite different projects and qualities. If, however,

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<sup>1</sup>The article by T.SONG in this volume should be seen as complementary to the following analysis.

<sup>2</sup>See e.g. R.L.FREY, *Infrastruktur*, op.cit., R.JOCHIMSEN, op.cit., J.STOHLER, op.cit., and the literature given in U.E.SIMONIS, *Infrastruktur: Theorie und Praxis*, Kiel 1972.

the individual preferences for infrastructure do not reveal themselves, or do so inconsistently, whether this is because alternative hospitals, roads, schools etc. cannot be built at the same time, or whether it is that the hospital, road, and school user groups are different - then, the planners in face of the many possibilities are confronted with the necessity of making their own value decisions. In alleviation it is acknowledged that forecasts are often self-fulfilling: the supply of new roads influences the choice of route, the supply of new hospitals leads doctors to send more patients in ("Say's law of hospital beds").

Even taking into account all the difficulties resulting from these factors and their interdependencies, a critique of a partial infrastructure problem will in all probability end with the attempt to overcome the problems with partial solutions, avoiding the question of the underlying economic concept. At best one is limited to diluting its problematical nature. This should hold true also more or less for Japanese economic planning, which is so fixed as to attain infrastructure planning figures through international cross-section comparisons. Not enough light is thrown on the specific junctim between economic goals (Zielpolitik) and economic order (Ordnungspolitik), or between economic growth and the system of markets.<sup>1</sup> Even if this junctim does not a priori tend to support one-sided interests, it can be said that other goals - especially that of Social Balance - are thought to be reached through this concept and not reached independently or directly. Yet, this does not prove the logic of this concept, at most its popularity: even a very rapid economic growth can only prove a 'factual plausibility', not give an objective justification for the existing growth concept. Therefore, it may be supposed that the achievement of a satisfactory relationship between public and private goods, between infrastructure and private investment, was prevented in Japan precisely because of the theoretical and practical 'power of conviction' of the traditional economic growth concept. Whether this concept still is realistic regarding the actual economic and social situation reached must, however, be examined.

Theoretical and field analysis of economic growth often show a

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<sup>1</sup>Cf. W.GLASTETTER, op.cit., p.109-112.

common feature in spite of the difference in method: the infrastructure problem is recognized but at the same time "hived off".<sup>1</sup> By concentrating on the quantitative growth aspect (infrastructure as growth stimulant) an unconditional "necessity of growth" is implied, yet the question about the rationality and purpose of economic growth is neglected. The solution of the infrastructure problem, however, should be essentially dependent on the qualitative valuation of the growth process, i.e. the inclusion of qualitative objectives in economic thinking.<sup>2</sup> From the methodological point of view, this means that investment in infrastructure cannot be brought to an optimum with a business-oriented production function in mind. To sum up: Though in theory and in practice the predominant attitude towards the infrastructure problem does seem to have changed somewhat in recent years there has been no genuine advance beyond the recognition of the necessity of public investments as such. Economic growth carried by private investment still stands in the forefront and is not seriously criticised, the rationality of private investment is hardly questioned.<sup>3</sup>

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<sup>1</sup>For example: "Although it would be necessary to take into full account the benefit-side of infrastructure, this can be eluded by assuming complementarity between private goods and infrastructural goods." Or: "A way out would be, to renounce the presentation of the welfare effect of infrastructure and to take into account only the cost-side ..." R.L.FREY, *Infrastruktur und Wirtschaftswachstum*, in: *Konjunkturpolitik*, Vol.15, Berlin 1969, p.108 and 55. This approach, I think, is not a way out of the methodological problem of infrastructure, but a blind alley.

<sup>2</sup>Cf. E.J.MISHAN, *op.cit.*; E.KÜNG, *Wohlstand und Wohlfahrt. Von der Konsumgesellschaft zur Kulturgesellschaft*, Tübingen 1972.

<sup>3</sup>"The economic growth of Germany and Japan shows many parallels ... Both countries share the goal-direction of economic policy: it is strongly growth-oriented": T.WESSELS, *Entwicklungstendenzen der deutschen Volkswirtschaft nach dem zweiten Weltkrieg*, in: K.HAX, W.KRAUS (Eds.), *Japan und die BRD*, *op.cit.*, p.19 (translation). According to Heimann, modern industrial society is put before the alternative to either "move on the road of private economic triumph", thereby relying more and more on the 'crutch of advertising', or to improve the system in such a way as to allow to escape from "the necessity of expansion". He says: "Production is dependent on demand, and demand must be changed before advertising fails": E.HEIMANN, *Soziale Theorie der Wirtschaftssysteme*, Tübingen 1963, pp.321-322 (translation).

In the theoretical and practical discussion of economic policy the following negative arguments against more public investments were prevalent.<sup>1</sup> In the first place came the problem of "objectivity in valuation", i.e. it is claimed that the demand for social balance in the investment structure is cognitively on shifting sands, since no objective criteria exist for its determination. Or, it is more or less inferred that public investment is of a "pyramid type", has a marginal productivity of zero or no real capacity effect. Thus, especially, the potential rôle of infrastructure in regard to integration and social balance in an economy is underrated. Or, one goes further and recognizes the productivity of public investment but does not find the justification for this in public needs, but as a means to satisfy private business needs. By this, "welfare" und "progress" identified with the growth of the GNP is clearly given priority over a criterion of social balance: infrastructure investment according to this reasoning should not restrict private investment, or, with regard to the environment, negative effects of private investment should be compensated by positive effects of public investment.

General formulations such as: "public expenditure are a particularly important factor in economic growth" (W.Heller); "educational investment is of determining influence on economic growth" (S. Ichimura); "the government has a special responsibility in the promotion of growth" (P.A.Samuelson), cannot deceive us that the debate is basically confined to the growth conditions of GNP. The public sector and public investment are given no independent existence, as would be logical and necessary when working on the criterion of social balance: "... they are not independent categories alongside private investment, they are cast in a supporting role".<sup>2</sup> From the fact that rapid economic growth, measured by an inadequate GNP-index, had and still has unbroken priority in Japan

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<sup>1</sup>Cf. O.SHIMOMURA, Nihon keizai no kicho to sono seicho ryoku, in: Kinyu zaisei jijo kenkyukai hen, 1959, p.3; idem, in: I.NAKAYAMA (Ed.), Nihon keizai no seicho, Tokyo 1960; W.ENGELS, Die öffentliche Verschwendung, in: Frankfurter Allgemeine Zeitung, 22.7.1972. For a critical comment see Y.SHIMA, The Income Doubling Plan and Public Investment, in: The Kyoto University Economic Review, Vol.31,1, 1961.

<sup>2</sup>W.GLASTETTER, op.cit., p.105.

(as is also clear in Germany, although there is more variation here) it follows that policies can hardly break through towards social balance.

In Japan, too, infrastructure investment has been used for stabilizing business cycles (increases during recession, putting the brakes on during a boom).<sup>1</sup> This policy has hardly been questioned till now, although a satisfactory investment structure has not been achieved in this way. Yet, stability can no longer be measured only by the price and employment indices.<sup>2</sup> Stability is becoming more and more a question of an optimal balance of the structure - and not only the level - of total demand for private and public goods.<sup>3</sup> This balance can be approached through a longer term substitution of private by public investment and by a re-allocation of public expenditure among the infrastructure sectors. For this, infrastructure investment should not passively follow private investment ("dictatorship by private decisions", P.G.Jansen). Instead, infrastructure policy must actively influence or prepare the pattern of development and strive for autonomous objectives. A proportional growth of public and private investment (the "productivity-oriented budget") thus signifies a maintenance of the status-quo, under certain conditions not even this. In a rapidly growing economy a (nearly) constant ratio of nominal private to nominal public investment may really mean a further favoring of the private sector, because of relatively higher price rises in the public sector. This is to a great extent caused by the land intensity of public investment, i.e. the large share of land cost in total investment costs, for which we have already cited some proof.

Several Japanese forecasts say that the share of public investment in nominal GNP will rise in the future.<sup>4</sup> Yet, it is easy to

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<sup>1</sup>This is clearly to be seen in the public discussions in 1971 in Japan, on how to solve the business recession.

<sup>2</sup>It is astonishing but characteristic that two of the important German publications on the structural problem of "Infrastruktur" - those by Frey and Stohler - were published in the journal "Konjunkturpolitik".

<sup>3</sup>Cf. U.E.SIMONIS, Infrastruktur. Eine Herausforderung für Wissenschaft und Praxis, in: Gewerkschaftliche Monatshefte, Vol.21,12, Köln 1970, p.725.

<sup>4</sup>Cf. the current medium-term and long-term development plan, op. cit.; Japan's Economy in 1975, Japan Economic Research Center, Tokyo 1970.

see that for a policy aiming at social balance in real terms a great deal will depend on actual price developments in the public sector. Without an effective land policy, a considerable part of the expenditure increase for infrastructure in the current planning period will be truly pulverized by price rises on the property market, which means a reduced real effectivity of nominal investment expenditure. In Japan, as in Germany, the problems of the property market are not mastered at all, and it is difficult to say which damage is more severe: "... the financial burden on the communities through speculation profits on the property market, the social costs of communal projects given up because of property speculation, or the political damage following from the impossibility of public planning and democratization of the planning process".<sup>1</sup>

One argument often heard in Japan is that "more investment in infrastructure will lower the growth rate of the economy"<sup>2</sup>, or more recently: "social capital investment and environmental pollution control should be in harmony with sound economic growth".<sup>3</sup> In the 1969 report of the West German government on structural development, which some economists praise as a break-through to modern structural policy, it is said that structural policy should serve to "ensure a steady growth within the framework of a free-market economy".<sup>4</sup> Both types of statements make clear where even in the future the limits to an active infrastructure policy will be. So as the criteria for decisions regarding economic goals are sought exclusively in more growth of the GNP, so in the field of economic order they are sought in the given market system. However, economic policy which makes maximization of the growth rate of GNP its dominating goal - and measures this alone by the traditional

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<sup>1</sup>S.KATTERLE, op.cit., p.65; see also Tokyo Fights Pollution, op.cit.

<sup>2</sup>Cf. O.SHIMOMURA, op.cit., p.5.

<sup>3</sup>See e.g. Article I of The Basic Law for Environmental Pollution Control (Kogai taisaku kihon-ho) which passed the Diet in July 1967. An English text of this law may be found in the Appendix of S.TSURU, Proceedings of International Symposium on Environmental Disruption, op.cit.

<sup>4</sup>DEUTSCHER BUNDESTAG, Drucksacke V/4564, Bonn 1969, p.186 (translation).



national accounts without further qualifications - will run the risk of a relatively decreasing welfare content of the output produced, of an excessive concentration of industry and population, of increasing environmental pollution and finally also of an insufficient supply of household-oriented infrastructure.

Therefore, an attempt should be made to judge the achievements of the economy according to criteria which go beyond those of the traditional GNP. One important condition for this is to reform the system of national economic accounting or to supplement and replace it by a system of social indicators.<sup>1</sup> This means extending traditional economic analysis in the direction of a political economy. In other words, only when first the problematical nature of the growth objective becomes clear, will the way be free to better localize social needs and to orientate production accordingly.<sup>2</sup> There is some evidence that in Japan gradually the point in time is being reached when it will be possible to make a move into this direction, i.e. to aim more directly for specific social goals and to combine quantitative with qualitative development, and to gain liberation from an "undifferentiated drive to expand".

Lastly, some of the problems for infrastructure planning arising from these developments should be dealt with briefly. To begin with, it is certainly questionable whether a bigger share of public expenditure in GNP and in total investment will alone solve existing infrastructure problems; it certainly will not lead to a quasi-automatic solution. The root-causes of the problem are, as has been shown, multiple and go beyond the negative consequences of the "myth of the market economy". It is, as J.K. Galbraith has said, not only a question of winning a larger budget but also a question of the attitude towards new objec-

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<sup>1</sup> On the necessities and the possibilities for such an approach see, particularly, the special issue of *The Journal of Development Studies*, Vol.8, No.3, 1972, and the literature given there.

<sup>2</sup> Cf. K.W.KAPP, *Environmental Disruption and Social Costs: A Challenge to Economics*, in: *KYKLOS*, Vol.23, 1970; U.E.SIMONIS, *Neue Zielvariable für die regionale Wirtschaftspolitik. Methodische Ansatzpunkte der Umweltplanung*, in: *Stadtbauwelt*, Vol.23, Berlin 1972; *Development and Environment. Report and Working Papers of a Panel of Experts convened by the Secretary General of the UN Conference on the Human Environment, Paris, The Hague 1972.*

tives. As most infrastructure investment is planned, executed or controlled by government, it is further a question of the effectivity of administrative mechanisms, of their structure and capacity to translate social needs and plans into action.<sup>1</sup> Yet, even in Japan, in spite of various attempts, there is no sufficient description of how an optimal social planning system should look like. Non-market decision-making systems, which can be grouped into hierarchical, polyarchical and bargaining systems, are found mostly in hybrid form in the field of infrastructure policy; the more hierarchical systems are very strong in Japan, the polyarchical ones more frequent in Germany. Theoretically, these decision systems do not make it impossible to follow an active infrastructure policy, but they bring with them various failings which in practice make near-optimal solutions highly unlikely.<sup>2</sup>

Very probably two changes in infrastructure planning will take place: institutional arrangements, improved project selection and co-ordination. In Japan several revisions in the indicative planning and advisory systems will take place and the extension towards a multichannel system is envisaged.<sup>3</sup> Revisions in the medium-term fiscal planning system and the introduction of a political "task planning system" may take place in Germany.<sup>4</sup>

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<sup>1</sup> See, particularly, D.WEISS, *Infrastrukturplanung. Ziele, Kriterien und Bewertung von Alternativen*, Berlin 1971.

<sup>2</sup> For general discussion cf. A.DOWNS, *An Economic Theory of Democracy*, New York 1967; B.FREY, *op.cit.* An analysis of Japanese situation is given by S. LÖRCHER, *op.cit.*; T.SONG, *Sozialpsychologische Determinanten der Japanischen Wirtschaftsentwicklung*, in: *Internationales Asienforum*, Vol.2,1, München 1971; C.NAKANE, *Japanese Society*, London 1970; K.BIEDA, *op.cit.*

<sup>3</sup> See, particularly, *Challenges from the Future*, Japan Society of Futurology, 4 vols., Tokyo 1971. To this cf. H.P.WIDMAIER, MUKAZO. *Perspektiven und Modell für die Industriegesellschaft*, in: *BP Kurier*, Hamburg, 1971,1. (An organogram of the Japanese planning machinery is provided in EPA, *New Economic and Social Development Plan*, *op.cit.*) However, a Japanese study group on future investment under S.Okita ascribes private investment and 'private development systems' a growing importance in the field of infrastructure investment. Cf. *Area Development in Japan*, Vol.1, Tokyo 1970.

<sup>4</sup> Cf. R.JOCHIMSEN, *Zum Aufbau und Ausbau eines integrierten Aufgabenplanungssystems und Koordinierungssystems der Bundesregierung*, in: *BUNDESPRESSEAMT, Mitteilungen No.97*, Bonn 1970.

Both point to future qualitative changes in the decision-making structures in the face of quantitatively increasing problems of infrastructure. Till now, a broadened socio-economic project selection by cost-benefit analysis is only in its early stage, and although much of the preparatory work for program-budgeting has been done it has not yet been introduced by the various government departments.<sup>1</sup> What seems to be most important, however, is to combine new planning techniques with new or changed goals. A practical willingness of the government to revise the single-minded growth motivation of the sixties can only be glimpsed, in spite of the evermore frequent citizen campaigns during the last years, and especially those against environmental pollution.<sup>2</sup> Thus a great "unknown variable" with regard to the future development of infrastructure policy in Japan will be the individual citizen whose tolerance threshold till now has been very high.

The reactions of the Japanese economy to the necessity and proclaimed intention of bringing the problems of infrastructure and social balance near to a solution remain till now fairly unsatisfactory. Therefore, we may be allowed to conclude with an argument brought forward to describe the situation in Germany and the other European countries but which, nevertheless, may also be valid for Japan: "Our political objectives are all since long trimmed to the maximization of the growth rate of GNP. There is an absence of real autonomous structural and distributional policy objectives. Indeed, there is also an absence of a concrete thought on how to ensure the implementation of what is planned - with the exception that it is said that the market system should be continued".<sup>3</sup>

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<sup>1</sup> Cf. M.OHKAWA, PPBS in Japan, in this volume.

<sup>2</sup> T.KAWATA, Japanese Trade Policy and Structural Adjustment, in: Internationales Asienforum, Vol.3,3, München 1972.

<sup>3</sup> R.JOCHIMSEN, Diskussion, in: H.ARNOLD, D.SWATEK (Eds.), Grundfragen der Infrastrukturplanung, op.cit., p.36 (translation). To this, a prognosis of the special situation in Germany: "... with the backing of most people and groups economic policy was above all interested in increasing the GNP. There are strong indications that in the near future the question of distribution will come into the center of public discussion.": T.WESSELS, op. cit., p.27.