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QUANTITATIVE, QUALITATIVE and STRUC-  
TURAL VARIABLES IN THE EVALUATION  
OF REGIONAL DEVELOPMENT POLICIES IN  
WESTERN EUROPE x)

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Quantitative, qualitative, and structural variables in the  
evaluation of regional development policies in Western Europe

1) On the Evaluation of Regional Development Policies

Although explicit instruments of regional development policy have been applied since the 1950's in most European countries, an evaluation of the success of these measures has received broader attention only in the first half of the 1970's (cf. Moore and Rhodes 1973; Fürst and Zimmermann 1973; Wolf 1974; Spehl et al. 1975; Kohler and Reyher 1975; Bölting 1976; OECD 1977, Bartels et al. 1981). This fact indicates a trend towards the rationalisation of regional development policies which may be traced back to the increasing scarcity of resources available for this purpose (or left besides attending to global and sectoral tasks) on the one hand, and to mounting political pressure of often subjectively experienced regional development problems on the other hand. The latter was the case although the degree of quantitative interregional disparities had successively decreased in most West-European countries (e.g. Molle et al. 1980) <sup>1)</sup>.

During the 1950's and 1960's, a close positive correlation

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implicitly had been assumed to exist between (objective, quantitative) interregional economic disparities and the degree of political pressure exerted by regional development problems. In other words, it was expected that the regional development problematique would be solved automatically with the reduction in interregional disparities of living levels. Most studies evaluating regional development policies were therefore oriented towards such quantitative indicators, as we shall show later. These expectations were frustrated however when, in the second half of the 1960's (still in a phase characterized by high national growth rates and predominantly declining interregional economic disparities), a sudden emergence of regionalist movements in many Western countries was registered (Esman, 1977) which, with the traditional regional development theorems, could not be explained.

The first explanatory approaches traced this back to the centralized characteristics of most regional policies persuing a reduction in interregional disparities, and particularly to the related pressure for spatial assimilation caused by traditional regional policies along with the penetration of peripheral areas by expanding central regulatory and service functions. These explanatory approaches essentially originated from political science (Esman, 1977, Tarrow et al. 1978).

Other studies undertaken independently from the latter show that important regional economic problems were related not

so much to quantitative economic changes but to underlying qualitative and structural transformations stemming from the increasing internationalisation of regional and national economies and the new spatial division of labour emerging in this context (Westaway 1974; Liepitz 1977; Stöhr and Tödtling 1978; Bade 1979; Mettler-Meibom 1979; Massey 1979; Müller 1981; Glickman and McLean Petras 1981).

## 2. Quantitative and qualitative transformations related to the internationalisation of the economy

Let us first briefly point to the preconditions under which these transformations took place. They are located on the one hand in the technological-entrepreneurial sphere, on the other hand in the macroeconomic and international economic sphere.

In the technological-entrepreneurial sphere the preconditions were an increasing division of labour, and the technological possibility for the resolution of production processes into a great number of discrete segments, both horizontally (sequence of increasingly shorter subprocesses) and vertically (differentiation between planning, organizing and executing activities), and the entrepreneurial possibility for drawing external and scale economies from these facts (Törnqvist 1973; Fröbel et al. 1977).

In the macroeconomic and international sphere the preconditions were the widely unhampered possibility of world-wide transfers of commodities, production factors, profits, etc.,

as well as the increasing integration of most parts of individual countries into a world-wide transport and communications system.

In reaction to these facts, both private and public functional institutions have started to organize across territorial borders: the first in the form of multi-regional and multi-national enterprises, the latter in the form of inter-regional and international development and financing institutions. Both make use of increased factor mobility and increased market and/or influence areas for realising their specific objective(s), be it maximizing profit, minimizing or compensating risk, increasing the efficiency of their inputs and/or increasing their stability and power. 2)

Increased market and influence areas, the increased divisibility and mobility of functions, as well as the ease of overcoming distance have facilitated to these - private and public - organizations also an easy transfer of functions and subfunctions over space according to their intra-organizational objectives (Ewers, Wettman et al. 1980) which do not necessarily coincide with the objectives of the territorial units (regions, countries, etc.) involved.

Gyllström (1982) - like before him other authors such as Hymer (1972, 1976) - distinguish various hierarchical levels to which certain entrepreneurial functions of multi-national firms are assigned, so e.g. at the highest (world-wide) level: entrepreneurial decision-making, medium and long-term

planning, inter-plant production and resource allocation, research and development functions; at the second (continental) level: market and financial analysis, advertising, etc., and at lower (e.g. national or regional) levels: purchasing and sales, service functions, etc.. Routine production processes will frequently take place at still lower hierarchical levels, frequently in peripheral locations.

A similar spatial division of labour - although with less vertical differentiation - can also be found in multi-regional enterprises within states (cf. Bade 1979, Massey 1979, Müller 1981, Tödtling 1981).

Although the spatial reorganization of specialized functions within multi-regional and multi-national enterprises has become easy and is taking place at a large scale (Leigh and North 1978, Massey and Meegan 1979, Müller 1981), this fact has been widely ignored so far by explicit regional policy. Such a spatial reorganisation of entrepreneurial functions frequently causes rapid changes in the pattern of spatial supply and service relations, in the use of regional natural and human (labour market) resources (Britton 1974, Spehl et al. 1975, Marshall 1978 a) and b)). However, they have direct repercussions upon the level and quality of regional economic activities, employment, environmental quality, etc. of the respective territorial units.

In the economic sphere this leads to changes in regional multipliers, flow patterns of capital, technology, and inno-

vation, changes in dependency relations of individual plants as well as in their degree of stability; in the sphere of the labour market they lead to changes in the qualitative structure of employment, the degree of diversity and stability of jobs, and to the formation of spatially segmented labour markets (Gerlach and Liepmann 1972, Buttler et al. 1977, Mettler-Meibom 1979). All these characteristics however, are of considerable importance for the medium and long-term development potential of individual regional communities.

Border crossing activities of transregional or transnational private or public organizations in most cases manifest themselves in the transfer of private capital or public finance, which in the recipient regions usually leads to an increase in productive capacity and thereby to a rise in the usual quantitative indicators of development such as regional product, per capita income, balance of trade. This frequently also leads to the statistical reduction in interregional economic disparities mentioned (e.g. Molle et al. 1980). If less developed areas are promoted by capital incentives and public transfers as is the case in most West-European countries (Yuill, Allen and Hull, 1980), the standard evaluations of regional development policy (see point 4 below), which only deal with quantitative indicators, will in all likelihood yield a formally positive result. The qualitative and structural transformations mentioned above and their medium and long-term consequences upon regional development will not appear in these analyses, however.

During the 1950's and 1960's, the negative effects of these transformations were concentrated upon "peripheral" areas <sup>3)</sup>. Now they are not any more restricted to the latter, however: An acceleration in changes of the international division of labour, and an increasing spatial division of labour also within larger metropolitan areas (between their respective centers, intermediate and peripheral zones) have created major repercussions also for core-regions and particularly the old industrial areas.

In the public sector these structural transformations have in most countries led to spatial incentives and redistributive measures which in view of the world-wide origin of these transformations became established mainly at the central national level, thereby leading to an increased centralization of governmental policy even in federal states (e.g. Krumme 1981).

The results in most countries were increasing demands upon central government (in Europe: national or EC funds), an increasing centralization of effectively disposable resources at the national level, increased redistributive requirements and an increasing distance between effective public decision-making and the individual citizen. In a self-reinforcing process this has led to a further concentration of entrepreneurial decision-making functions around the locations of central government (Hamilton, 1976) and consequently in most cases to a parallel shift in subcontracting, mostly to the



detriment of the regional multipliers for less developed areas.

In previous rapid growth periods, these structural transformations had been temporarily superseded in quantitative terms by spatial spill-overs generated via the market process or by major public transfers. In the present slow growth or stagnation period however, they become visible directly and in the short run.

In evaluating strategies and instruments of regional development policy it will therefore be important to include in analyses also the consequences of such qualitative and structural transformations. Methodologically this is still a research frontier but it seems clear that the methods of traditional economic analysis will not be sufficient and will have to be complemented by theoretical concepts and analytical methods of other social sciences.

### 3) On the formulation of regional policy objectives

In most countries, explicit objectives of regional policy are related to the reduction in regional disparities of living levels. This is the case e.g. in the FRG, in France, Great Britain, Italy, Austria, and in Switzerland (cf. Sant 1974; Hansen 1974; Stöhr and Tödtling 1977; Hess 1979; Hollenstein and Lötscher 1980; ÜROK 1981; Vanhove and Klaassen 1980).

In some countries the terms "regional disparities" and "levels of living" are defined only vaguely and lack specification. This is the case e.g. in France, Great Britain and Switzerland (Sant 1974; Hansen 1974; Hess 1979).

In some other countries at least a few target areas are specified, such as sufficient employment opportunities in quantitative and qualitative terms, sufficient supply with social, commercial and cultural services, or the preservation of a "good" environment (FRG, Sweden, Austria; see Stöhr and Tödtling 1978; ÜROK 1981). These objectives, however, are usually not operationalised and quantified, nor are there relative weights attached to them.

Although in some countries non-economic (service provision, social, cultural, environmental) objectives and such concerning regional economic structure are stated at least in general terms, at the level of concrete regional programs and strategies, however, clear priority is given to aggregate economic goals (e.g. number of jobs created, increase in per capita income, in overall productivity etc.; see e.g. Vanhove and Klaassen 1980; Yuill, Allen and Hull 1980; Hembach 1980). This is also valid for most studies evaluating regional policies.

#### 4) Quantitative, qualitative and structural variables in regional policy and its evaluation

By "quantitative variables" we here mean (usually regionally) aggregate or average measures of economic or social

variables such as regional product, total employment, rate of unemployment, total investment, per capita income, net migration, etc..

By "qualitative variables" we here mean the internal distribution or qualitative characteristics of quantitative variables as they are related to differing implications for the development process. In the present context this refers e.g. to differences in the qualitative composition of the work force and of jobs, in the age of the capital stock and its flexibility, in the innovative character of products, etc..

By "structural variables" we here refer to information about functional interrelations in the sense of a "net of interrelations of parts that form the social system and their functions in maintaining the system"<sup>4</sup>). In the present context these concern mainly organisational and institutional relationships between plants and/or territorial units (e.g. regions) and the resulting symmetrical interdependencies or asymmetrical dependencies.

Examples of these three groups of variables are given in Fig.1.

Regional policy as well as analyses to evaluate it, have up to now mainly dealt with aggregate quantitative ("growth"-) variables (cf. Fig. 1).

Most of these analyses have up to now focussed on "uncontro-

versial" and easily measurable aggregate quantitative economic and social variables such as regional product, per-capita income, aggregate employment, net migration, quantity of service provision, etc. (see Nuppnau 1974; Bötting 1976; Moore and Rhodes 1977; Recker 1977; Ashcroft 1978; Ashcroft and Taylor 1978; Hembach 1980).

Regional policy and its evaluations, however, have - with few exceptions (e.g. Frost and Spence, 1981) - hardly considered the question of whether a positive change in these variables did actually lead to an increase in the development potential of the respective region, or whether it only represented the quantitative aspect of a spatial reorganisation of functions within multi-regional organizations, the qualitative and structural consequences of which were important but escaped explicit evaluation. In many cases e.g. capital imports or increases in gross product or employment have been accompanied by a dequalification (increased social downward mobility) of employment (cf. IIR forthcoming) and by an increase in the extraregional dependency of jobs (e.g. by the establishment of branch plants; cf. e.g. Tödtling 1981). This dequalification of regional employment has, together with a regionally uncoordinated educational policy, in many cases increased the negative selectivity of outmigration still further (IIR forthcoming) instead of reducing it. Both processes would, without doubts, in the medium and long run lead to a decrease in the regional development potential which is determined considerably also by qualitative and structural characteristics - although there may have occurred

a positive change of aggregate quantitative variables in the short run. 5)

Differentiated qualitative or distributional variables (e.g. changes of interpersonal regional disparities, of disparities in income, employment, migration or service provision by educational level or job qualification) as well as specific structural variables (e.g. financial, organisational and ownership dependencies) and their related functional and technological changes in space have hardly been systematically analyzed in evaluations of regional policy so far. This inspite of the fact that they have become increasingly important in the 70's in connection with the increasing internationalization of economic organizations.

Some analyses which attempted to consider explicitly qualitative and structural aspects (e.g. of entrepreneurial and employment structure), had done so either in a descriptive and not very systematic way (e.g. Wolf 1974, Kohler and Reyher 1975, Stark 1978, Ohlsson 1977) or with only implicit relation to regional policy instruments (Westaway 1974; Spehl et al. 1975; Marshall 1978 a) and b), Smith 1978; Mettler-Meibom 1979; Müller 1981; Tödtling 1981).

##### 5) Methodological aspects of the evaluation of regional policies.

Evaluation studies of regional policy

(see Fig.2) either aim at measuring to which extent regional

policy objectives have been met ("goal achievement control") and/or to which degree changes in regional conditions have been caused by regional policy instruments ("impact-control").

In some cases also what might be called "implementation control" studies were undertaken in which the orientation and implementation of specific programs with regard to stated objectives were analysed (see e.g. Jann and Kronewett 1979). Studies of these kinds and especially "impact-control" studies involve a number of problems:

Usually there are no operational and weighted objectives given (see point 3) and data on important structural and non-economic (social, cultural, and political) variables are lacking. One must keep in mind, however, (and we will come back to this aspect later) that the availability of statistical data is very often determined by the consciousness of scientists and politicians of certain problems and causal relationships.

In the context of the more narrow "impact control" there usually emerge furthermore considerable methodological problems if one tries to isolate the effects of specific regional policy instruments <sup>6)</sup>.

Such an isolation and quantification of effects of specific instruments is in principal of course desirable and could bring valuable insights as to the kinds and magnitudes of policy instruments to be used. In reality, however, such an isolation of the effects of specific instruments has - in view of the above stated methodological problems and

the required data (long time-series, cross-section on a broad basis) - up to now been possible only for highly aggregated variables and indicators.

Examples of this latter kind of analysis are the "reference-approaches" and regression analyses for Great Britain (Moore and Rhodes 1977, Ashcroft and Taylor 1978, Ashcroft 1978) or for the FRG (Bölting 1976, Thoss 1977, Recker 1977).

Among the variables included in these analyses were total number of jobs, number of newly established plants, jobs created therein, etc. (Moore and Rhodes, Ashcroft and Taylor, Recker) or the amount of regional investment (Bölting, Moore and Rhodes).

Because of the difficulties mentioned above, structural and qualitative variables have not been included in these quantitative assessments of the impact of regional policies. There seems to exist a "trade off" between the degree of methodological rigour in quantifying specific effects of policy instruments on the one hand, and the actual relevance and explanatory power for regional development of the variables investigated on the other hand.

We have tried to show above that the success of regional policy instruments - which in a narrow quantitative sense may be very effective - has often been unsatisfactory due to qualitative and structural transformations related to changes in "external conditions". Those qualitative and structural characteristics, however, have hardly been dealt with explicitly in regional science, nor in regional policy and its evaluation.

In other words, regional policy as well as its evaluation have usually analysed only a small segment (variables which can be measured quantitatively and have short term effects) of a much more complex net of relationships of regional development. They have especially neglected the qualitative and structural transformations related to the recent internationalisation of the economy which have assumed increasing importance for medium and long range effects on regional development.

This was the case in part because these transformations have attained increasing attention only within the last few years, partly because of difficulties in operationalising such qualitative and structural variables, as well as because of the traditional bias of regional science and regional policy towards the concepts and methods of neo-classical economics.

There are, however, as mentioned above, also reasons related to the availability of data and methods. The required differentiated data, which are very often difficult to operationalize and quantify, are in many countries not available from official data sources; also the required methods for their analysis are usually complex and little tested. On the other hand it must be kept in mind that the selection of data collected and the choice of methods used, to a high degree depend on the problems and questions which are posed systematically and pursued by decision-makers and scientists. It therefore seems particularly important to



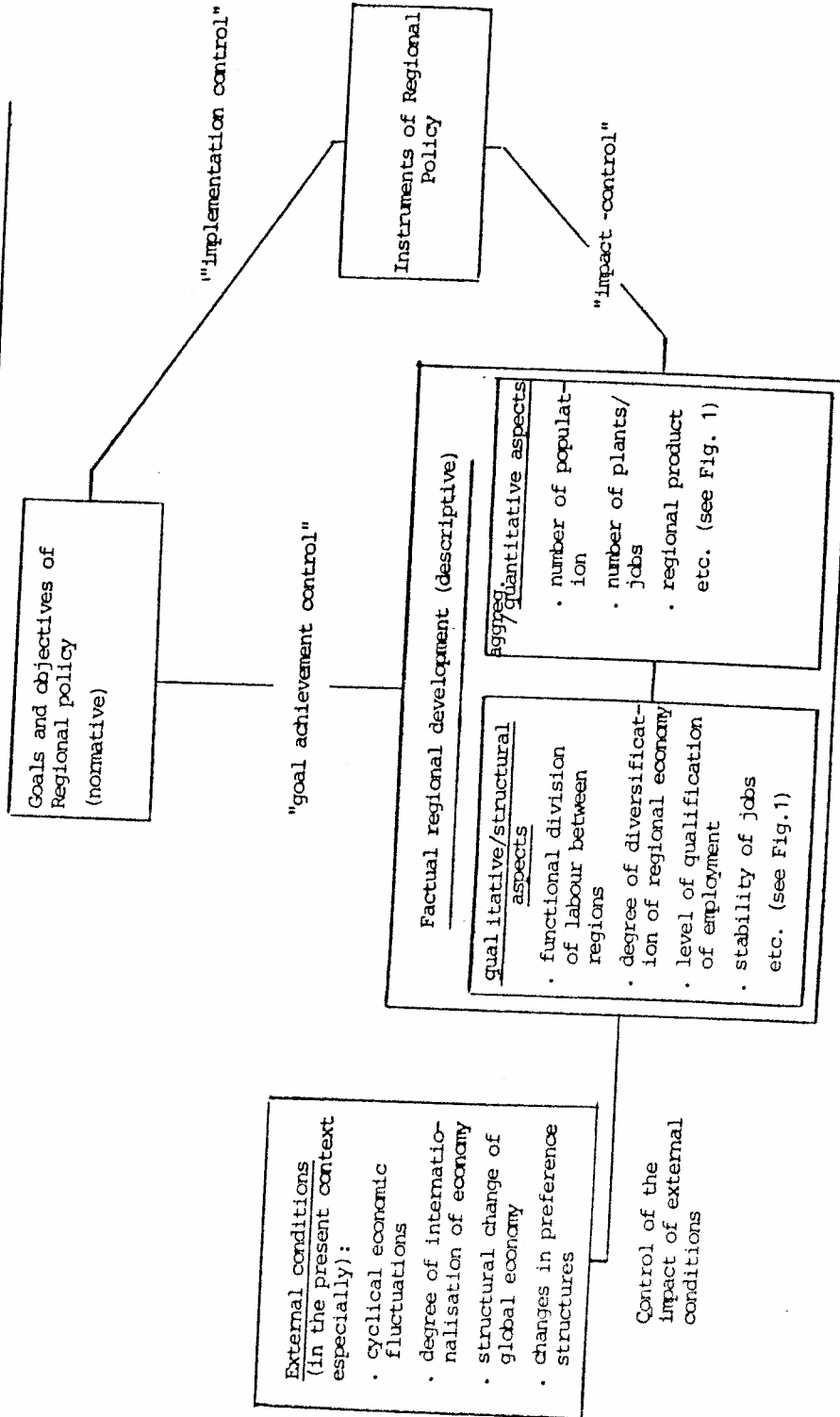
draw consciousness upon these new problems and the functional interrelations underlying them.

We therefore consider it important that in future regional science, but also regional policy and its evaluation, should put more emphasis on the analysis of these qualitative and structural transformations, even if the impact of specific regional policy instruments on these changes (impact control in the narrow sense) cannot be quantified exactly.

The effects of regional policy instruments on these qualitative and structural changes could be tentatively estimated by theoretical and empirical analyses at the micro-level of investigation (analysis of the importance of specific regional policy instruments for spatial decisions of specific types of firms/households) and by a systematic analysis of the implications of specific regional policy instruments on changes of qualitative and institutional regional conditions of regional economics, regional labour markets, public administration and the natural and built environment (see fig.1).

Fig. 1: Examples of quantitative, qualitative, and structural variables of regional development

	Aggregate quantitative Variables	Qualitative variables	structural variables
Economy (production)	<ul style="list-style-type: none"> <li>- no. of plants/jobs</li> <li>- regional product</li> <li>- volume of investment</li> </ul>	<ul style="list-style-type: none"> <li>- Sectoral structure (growth characteristics)</li> <li>- Distribution of entrepreneurial functions (information processing, decision-making, R + D, planning, financing and distribution, .... routine product. processes)</li> <li>- distribution by stage in product cycle</li> <li>- innovation capacity (e.g. rate of R + D expenditures, no. of products process innovations applied)</li> <li>- degree of external "exposure" of economic functions</li> <li>- share of regional supply, service, and sales relations</li> <li>- rate of fluctuation (openings, closures, transfers, etc.) of plants or entrepreneurial functions</li> </ul>	<ul style="list-style-type: none"> <li>- vertical division of labor between regions</li> <li>- degree of external functional dependence of branch plants</li> </ul>
Labour market	<ul style="list-style-type: none"> <li>- no. of employed</li> <li>- rate of unemployment</li> <li>- unemployment/job vacancy ratio</li> <li>- migration balance</li> </ul>	<ul style="list-style-type: none"> <li>- sectoral diversification of regional employment</li> <li>- distribution of employment by level of qualification</li> <li>- job fluctuation</li> <li>- migration by level of qualification</li> </ul>	<ul style="list-style-type: none"> <li>- regionally segmented labor markets</li> <li>- degree of external organizational dependence of regional employment</li> </ul>
Public finance and administration	<ul style="list-style-type: none"> <li>- financial capacity of territorial administrative units</li> <li>- amount of public investment in region</li> <li>- per capita supply with public facilities and infrastructure</li> </ul>	<ul style="list-style-type: none"> <li>- distribution of public receipts/ expenditure by administrative level</li> <li>- degree of concentration of tax receipts upon specific sources (by types of income, sectors, enterprises, etc.)</li> <li>- intra-regional multipliers of public investment</li> <li>- spatial incidence of public contracts</li> <li>- degree of adaptation of public services and infrastructure facilities to regional requirements</li> </ul>	<ul style="list-style-type: none"> <li>- degree of centralization of public expenditure</li> <li>- regional dependence upon external fiscal transfers</li> </ul>
Environment		<ul style="list-style-type: none"> <li>- rate of conservation of renewable and non-renewable natural resources</li> <li>- degree of environmental pollution</li> <li>- degree of maintenance of a harmonious built environment and of an integrated natural environment (closed feedback loops)</li> </ul>	



1) The major types of evaluation studies mentioned are based upon Hembach 1980. The terms have been translated by the present authors and adapted to terminology used in English.

## FOOTNOTES

- 1) This study analyses the period 1950-70 although a similar trend seems to have lasted at least until the middle of the 1970's.
- 2) One third of total world trade already takes place within multinational enterprises (ICIDI, 1980).
- 3) These are defined as areas with the least accessibility potential to national resources, markets, innovation, and decision-making centers (cf. Stöhr 1981).
- 4) The New Encyclopaedia Britannica, 1978, Micropaedia, Vol. IX, p. 620, "structuralism".
- 5) Frost and Spence (1981) e.g. state in this context that  
" ... a large part of the apparent convergence (of unemployment rates for different areas of the country over the last 15 years) ... can be accounted for by patterns of response to particular cyclical events" ... and .. "government policies have had insufficient effect to transform the nature of the balance of demand for and supply of labour in their areas." (p. 99). "Such evidence only emphasises the self-perpetuating nature of regional problems, with relatively low skill, high risk, institutionally peripheral jobs being replaced by new jobs with the same characteristics and the same problems" (p. 101).

- 6) Regional policy instruments have direct effects but also indirect effects and side-effects which are altogether difficult to operationalise. There exist furthermore considerable time-lags which have to be taken into account.

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