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Techniques and Criteria for Classifying Small and Medium-Scale Industries by Size

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1. Introduction: Classification as a normative exercise

The topic seems to suit well the German probing mind which is accustomed to deal extensively with concepts and definitions before taking up substantive issues. Maybe one gets the idea to look into the Small Business Law of Germany in order to obtain some orientation with regard to classifying industrial companies. But disappointment will result from this. The Law as well as German circles of academic and business nature have not so far defined the small business sector by applying clear yardsticks. The Law simply says that a small enterprise is a unit that belongs to any one of 126 trades listed in an appendix to the Law - irrespective of the number of employees, the amount of sales or the capital invested. Thus, in Germany there are quite a few "small businesses" with several hundred persons employed. This apparent contradiction results from the notion that the enlisted 126 trades would stand for rather labor intensive productive processes geared to specific orders of customers and not to mass production, a notion that is indeed highly controversial.

The German situation may be taken as an indication of the difficulty to come up with clear ways and means by which to classify industrial enterprises. Any classification of the business population must rely on at least one indicator and on a combination of this indicator with a certain value in order to establish a criterion. This combination involves a normative decision which has to be taken by somebody or some institution, but not the scientist. He can only provide advice but not assume responsibility for the decision eventually taken. The normative element of any classification of companies is due to the fact that one normally classifies in function of some purpose. One of the more important purposes would be to establish legal criteria with respect to possible promotional measures. This will be taken into special consideration in the following sections.

2. Facts about small and medium-scale industries

The delimitation of small business has been an issue for many decades. More recently, micro-enterprises are a segment of the business population that has attracted much attention. Definitional problems arise in most of the corresponding studies and oftentimes cannot properly be solved. Apart from a generally inadequate data basis, this stems from the fact that the aforementioned segments of the business population, however defined, are highly heterogeneous.

Nobody would doubt, however, that these business groups are of great importance for the functioning of the economic system at large. This is not the place to elaborate on the various merits of micro, small and medium-sized units but it should be noticed in principle that their existence is an essential condition for workable competition, preventing undue concentration and bringing about high level employment, adequate supply of goods and services for private households, human capital formation and a sufficient degree of flexibility of the economy.

Is the importance of these units bound to decline over time? The answer is definitely no as data in the following Table 1 would suggest for Germany, a country well on its way to a so-called tertiary society.

The outstanding results are that there is a tendency towards small to medium size over many decades and that this is, most of all, typical for manufacturing (and not for services). This trend may have to do, to some extent, with a pro cess of reorganization of larger units that is documented elsewhere.

Table 1 : **The German Business Population and its Dynamic**

A. Present situation:

- 3,600 units with an employment of more than 500 persons
- the rest of 1,900,000 units account for 2/3 of employment, 4/5 of training, 1/2 of GDP and 4/5 of patents

B. Trends in employment 1970-87:

- in units < 50 persons employment up by 1,77 Mio.
- In units > 50 persons employment down by 0.95 Mio
- Details about employment shares:
  - Units < 5 stagnating
  - Units 5 – 19 strongly increasing
  - Units 20 – 49 increasing
  - Units > 500 falling

C. Historical Trends in employment shares:

	1925	1987
- units < 5	33.0%	15.0%
- units 5 – 200	40.0%	52.7%
- units 200 – 1,000	17.0%	18.2%
- units > 1,000	13.0%	14.1%

These data are, of course, encouraging for all those who are concerned about the fate of small manufacturing units in the ongoing rapid structural change that is typical for industrialized as well as developing countries. It should, however, be noticed for the purpose of our topic that the data rely exclusively on the indicator of employment.

3. Principle means and purposes of classification

Next, we will ask which types of indicators one would take into consideration and what the purposes of classification could be. This is depicted in the following Table 2. Apparently, it is convenient to distinguish between quantitative and qualitative indicators, and it appears that the former are especially useful in the macroeconomic context concerning the field of application 1. to 3., whereas qualitative indicators would seem to have a microeconomic bias and to rather suit the partial approach of the field 4. to 6. Although our interest centers on the macroeconomic dimension, we will first briefly deal with the major aspects of the qualitative indicators.

Table 2 : **General Scope for Classification**

Field of application	Predominant Character of indicator
1. National accounting / census	quantitative
2. Economic policy making	quantitative
3. Private sector representative Towards government	quantitative
4. Member oriented service delivery of private sector institutions	qualitative
5. Applied scientific research	qualitative
6. National and international business promotion via projects	qualitative

3.1 Digression on qualitative indicators

There are numerous microeconomic fields of application for qualitative indicators and the following Table 3 is by no means an exhaustive list in this respect. The table can, however, convey the fact that qualitative indicators are well suited to distinguish between companies by size according to major functions of enterprises. At the same time, it is obvious how complex this task is if one thinks about fixing critical values (criterions) to the possible indicators. The latter should be defined as clearly as possible but cannot be hoped to apply across the board to all cases. Indeed, the various indicators suggested by Table 3 may carry a completely different weight from company to company. Again the purpose of classifying companies may be decisive for the design of the whole exercise. In any case, the possibilities of comparative analysis are greatly limited in the microeconomic context.

3.2 Classification issues in the macroeconomic context

Now we consider in more detail some major implications of the fields of application of indicators listed as 1. to 3. in Table 2. They refer, as was explained before, to the macroeconomic level, they may be in conflict to some extent and are nonetheless quite interdependent. The need for quantitative classification in the macroeconomic context arises because of two main reasons. The first refers to knowledge and information with respect to ongoing processes of structural change, tendencies of concentration and deconcentration in the business sectors as well as conditions of markets for products and factors. Interest and research concerning these aspects may be led by the notion that there is a more or less optimal way of organizing the economic system, especially in terms of a healthy and balanced business population.

Table 3 : **Application of Qualitative Indicators**

Category	Viewpoints for indicators	
	Small and medium Sized companies	Large companies
Management	Proprietor-entrepreneur -ship	Manager-entrepreneurship
	Functions linked To personalities	Division of labour by subject matters
Personnel	Lack of university graduates	Dominance of university graduates
	all round knowledge	specialization
Organization	Highly personalized Contacts	highly formalized communication
Sales	Competitive position Not defined and Uncertain	strong competitive position
Buyer's relationships	Unstable	based on long-term contracts
Production	Labour intensive	capital intensive, Economies of scale
Research and Development	Following the Market, intuitive Approach	institutionalized
Finance	Role of family funds, Self-financing	diversified ownership structure, access to The anonymous Capital market

Secondly, the need for quantitative classification in the macroeconomic context arises out of a search for a properly oriented policy towards the business sector by which one influences, corrects and compensates. Most of all, this would involve the promotion of micro, small and medium companies as important actors in growth processes and developmental change. Promotional measures can be entirely justified as long as they compensate these companies for their inherent size disadvantages vis a vis large units. The disadvantages may arise out of certain types of imperfection of competition, the bottlenecks and lags entailed in structural change, limited access to commercial credit and information as well as adverse fiscal and other consequences stemming from highly labor intensive productive processes, to list some major aspects only.

A justifiable policy of promotion would grant allocative subsidies and not distributional subsidies. It must not have the character of social security but be geared towards a support of self-help activities on the part of the respective segments of the business population. The promotion would, first of all, try to establish an equality of conditions for all business groups and may play a catalyst role in an effort to accomplish a social market economy free of major distortions resulting from undue monopoly power. It would also complement policy measures aimed at growth and development.

In Germany, for example, the promotion of small and medium sized companies has been broadened from the end of the 1970's onwards in order to facilitate the establishment of new companies in view of significant structural adjustments in the economy, to create new sources of employment in certain regions of the country and to provide incentives for research in smaller units.

These observations might lead to a discussion of the instrumental side of promotion, but within the context of our topic it suffices to say that major issues normally arise with respect to the diversity of potential and actual measures and the degree of centralization or decentralization with which they are applied. In general, the harmonization, consolidation and concentration of measures are highly desirable. One also has to take into account that results are hardly achieved in an automatic way. Most of all, promotional measures must be transparent to the beneficiaries in the micro, small and medium sized business communities. With this in mind we can now look at specific quantitative indicators.

3.3 Pros and cons of quantitative indicators

Table 4 contains a list of quantitative indicators that have been taken into consideration in practical and scientific fields. It is obvious that they address themselves to very different aspects and that some of them are of such a special nature that they would be of only limited usefulness in an effort to quantify industrial enterprises by size.

Table 4: **Quantitative Indicators**

Category	Degree of macro-Economic operationality	Character
1. Sales	high	constitutive
2. Employment	high	constitutive
3. Fixed capital	reasonable	complementary
4. Value added	limited	supplementary
5. Costs of inputs	limited	supplementary
6. Volume of inputs	limited	supplementary
7. Volume of production	non-operational	useless
8. Participation in the Market	non-operational	useless
9. Profits	non-operational	useless
10. Total sum of balance of payments	non-operational	useless

We have, therefore, specified these indicators in terms of their degree of macroeconomic operationality and character. The former would, most of all, refer to the context of small business promotion to be granted and/or carried out by official entities. The latter has to do with the degree to which the respective indicator by itself would serve to establish size criterions. "Constitutive" means that an indicator of this character can perhaps suffice by itself.

This quality of being "constitutive" can only be attributed to Sales and Employment because of their rather comprehensive nature and ability to reflect underlying business activities. Tables 5 and 6 report on their pros and cons; in addition, Table 7 outlines strengths and weaknesses of the indicators Value-Added and Profits. The arguments presented in these tables are quite self-explanatory. Points marked with an asterisk would, in our view carry a major weight in the evaluation of the indicators.

Table 5: **Pros and Cons of Sales as an Indicator for Classifying Companies by Size**

Pros	Cons
- Easiness with which to obtain data	- * Inflation and the business cycle require "dynamization"
- Businessmen are accustomed to report	- rigid application leads to regrouping of companies over time
- Indicator may be linked to needs and to possibilities of self-financing	- "dynamization" creates uncertainty
- *up to date documentation	- average values differ greatly from branch to branch
	- possible discrimination of successful units in the context of promotion
	- * relative weight of the value intermediate inputs differs from branch to branch
	- influence of stocks of products

Table 6: **Pros and Cons of Employment as an Indicator for Classifying Companies by Size**

Pros	Cons
- *Avoidance of problems in terms of "dynamization" and differing shares of value added	- *turn-over rates varying over time and between branches
	- *part-time employment, role of helping family members
	- necessity to fix a date or period
- subsidies obtained would not be withdrawn in case of productivity gains	- possible discrimination of labour intensive branches
- easiness with which to obtain data	- *role of automatization
	- census data collected irregularly

Table 7 : **Pros and Cons of Value-Added and Profits as Indicators for Classifying Companies by Size**

Indicator	Pros	Cons
Value Added	- *"objective" protection in terms of productivity - projection of contribution to GDP	- *difficulty in obtaining data - *difficulty in esta-blishing yardsticks (criterions)
Profits	- projection of performance - projection of needs and stability	- *valuation - difficulty in obtaining data, especially from small units - difficulty in esta-blishing yardsticks (criterions) - *practicability

3.4 Findings

First, the industrial sector is highly heterogeneous with respect to attempts at classification. This is projected by the various viewpoints presented in the Tables 5 to 7. It should especially be noticed that the values for indicators may move into different directions when considering business expansion, an example being employment and sales. This problem is even more pronounced in an inter-branch comparison which may reveal a rather limited meaningfulness of indicators, including the "constitutive" ones. Unfortunately, this situation is even worse if one goes beyond manufacturing and extends the analysis to trade and services. In the final instance, local conditions, regional differences, structural change, the characteristics of production, the nature of products and the like determine that one has to compromise when applying indicators in order to classify industrial companies by size. To compromise may mean to apply indicators in a flexible way or to work with differing criterions. Company size remains something of a relative nature. It is not possible to find indicators that would permit an exact classification of the micro, small and medium sized segments of the industrial business population.

Secondly, it is advisable to work with only one main indicator in view of the partly conflicting nature of the indicators explained above. Considering the various pros and cons of the indicators, employment appears to be the most convenient yardstick for industrial companies, whereas sales might do a better job in the case of units operating in trade and services. This does not exclude the application of other indicators, but these will only have complementary and supplementary functions.

Thirdly, a further significant problem arises when it comes to establishing, in concrete terms, specific size categories. To be sure, the application of one indicator (together with a critical value leading to a criterion) puts a given company definitely into a certain group. But have the limits for this group been fixed properly, be it micro, small or medium? Is the classification representative? The answer is that not only must there be a clear delimitation towards groups above and/or below but, what is more important, the characteristics of companies in one group must also be significantly different from those pertaining to other groups.

Fourthly, the foregoing considerations will lead to the finding that, as a rule, it is in most cases extremely difficult and highly arbitrary to distinguish between small and medium-sized companies by drawing a precise line in terms of either the employment or the sales indicator, since the two resulting groups will not be homogeneous.

The German government, for example, therefore considers it advisable not to apply a schematic distinction between small and medium and prefers instead to work with the notion of an intermediate sector ("Mittelstand") which comprises the two. It uses a so-called soft delimitation of the intermediate sector towards large units and defines the intermediate size oftentimes with quite different criterions, depending on the specific purpose in the context of various policy measures. The soft delimitation is based on the understanding that "intermediate" involves units that normally do not obtain finance via the capital market and are managed by independent owners who assume a corresponding risk. It is interesting to note that thereby qualitative indicators are used to classify, in a "soft" way, the intermediate sector and that this apparently is instrumental for individual companies to develop a feeling of belonging. It is of further interest that greatly differing quantitative yardsticks are applied to this qualitative classification in such a way that one effectively deals individually with each case of macroeconomic application, including of course the various types of promotion. This may be considered a pragmatic approach to which there is not really an alternative.

Fifthly, the micro sector of the industrial business community merits special attention in developing countries since it is largely identified with the so-called informal sector and exhibits unique characteristics and features:

- it has largely the character of being residual,
- its existence is mainly due to the need of the otherwise unemployed to have a capacity for income generation,
- entrepreneurial functions are rather limited if at all present,
- the amount of capital invested is minimal and productivity is extremely low and
- significant socio-economic implications for the society as a whole must be taken into account within promotion policies and other contexts.

In view of these characteristics and features it may be convenient and advisable to add fixed capital to complement employment as yardstick and thereby have two main indicators by which to definitely single out the micro segment of the industrial sector.

4. Conclusions

The classification of companies by size is in principle a normative exercise. It does not have a justification per se but is always related to some more or less specific purpose. This requires that classification is carried out in a flexible way depending on the given field of application. Looking at the characteristics of the industrial sector in relation to the various possible indicators, it is not recommendable to fix a clear and exact drawing line between small and medium-sized units in terms of employment, which happens to be the quantitative indicator of major importance in an effort to classify companies by size.

The following Table 8 summarizes our suggestions for the choice of indicators.

Table 8 : **Classification of Industrial Companies**

Size Categories	Main indicator	Secondary indicator
Micro	Employment/Fixed Capital	(Sales)
Small/Medium	Employment	Sales
Large	Employment	Sales

The content of the following Table 9 is intended to underline that the task of promotion is highly complex and that size criterions may have to differ greatly from case to case when the beneficiary groups to which certain measures are geared are singled out. For example, the appropriate indicator in the case of credit extension may be sales, while in the case of training the indicator mployment will do better. Ultimately, this may also have to do with limited funds available for promotion.

Table 9 : **Principles of Business Promotion**

Goal	Approach	Measures	Viewpoints for Criterions
- Number Of companies - Efficiency -	- Physical Capital Formation	- direct financial assistance - fiscal incentives - ownership participation	Necessity, stability, Compensation, help to self-help, "justice", competitiveness, productivity, profitability, simple operational and transparent ways and means of application
- Employment	- Human capital formation	"new business creation" - counselling/ consultancy - technology transfer - promotion of R & D	

Decisive are the ways and means by which this is being done. Promotion of small and medium-scale industries should avoid pursuing non-economic goals which normally cause some unforseeable cost. Promotion should also be in line with the country's pattern of comparative advantage and policies should abstain from directly influencing this pattern. The failure frequently made in the context of industrial policy is indeed to assume that a government can identify the areas of the country's comparative advantage. In reality, this is not an easy task, particularly in an economy where previous interventions led to distorted prices.

Government intervention should be supportive of market trends and forces, not preventing change. It should not stifle private initiative and limit competition. Government intervention for the benefits of small and medium-scale industries should always be seen as part of an overall strategy of moving the economy closer to a situation where distortions and sustained government interventions are minimized. All of this means that a thorough understanding of sector and subsector institutions and conditions, needs and opportunities is an essential prerequisite for developing appropriate approaches for small and medium-scale industries support, and that subsector and firm-specific interventions by government have to be justified as exceptions and will be limited in number and in time. Cooperation with private sector institutions like chambers and associations is an adequate means to privatize promotion.

These institutions would be an efficient medium for a fine tuned and highly qualitatively oriented approach to assistance of companies, with a target group delimitation primarily based on qualitative indicators. This is, however, only a long term perspective in most developing countries in view of the weak corresponding institutional infrastructure and the slow and tedious process of building it up to the necessary high standard.

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