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## Summary

Observations on the Concept and Measurement of Underemployment  
with an Example from Puerto Rico

By Elydia Fort de Ortiz<sup>1/</sup>

The measurement of underemployment must be always relative to the socio-economic structure of a country; there is no measurement which is uniquely correct for all situations. This is because underemployment is a composite of factors including: (a) an economy which can avail itself of modern science and technology so as to increase the output per worker; (b) desires on the part of the workers to do more work; (c) the inability of the economy to provide such desired work. These and other factors can be combined into a statistical measure as was done in Puerto Rico.

This Commonwealth conducts a house-to-house survey of its population four times a year. Persons employed during the survey period are asked additional questions aimed at determining whether they had wanted to work more hours per week but could not do so because the economy failed to provide such work. They are asked: (1) in addition to working, did you also look for work? (2) why didn't you work more hours last week? (3) did you want to work more hours last week? In addition, self-employed farmers are asked whether they sell or consume most of their agricultural produce. The underemployed, in general, are defined as: the self-employed farmers who consume most of their produce; plus others who could not get as much work as they had wanted (subject to certain limitations on hours worked per week).

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This is based on a study "Results of Tests on Measuring Under-employment in Puerto Rico: June and July 1952" (Bureau of Labor Statistics, Commonwealth of Puerto Rico, Technical Report on the Labor Force, No. 2, 1953), prepared jointly by A.J. Jaffe and Elydia Fort de Ortiz.

\* General distribution of this document is limited to the introductory summary. Participants who have been invited to take part in the meeting referred to above will receive also the full text of the paper. Other participants in the Conference will receive the full text upon request.

Remarques sur la notion et la mesure du sous-emploiExemple d'étude effectuée à Porto-RicoPar Elydia Fort de Ortiz <sup>1/</sup>

Résumé. Le sous-emploi ne peut être mesuré qu'en fonction de la structure économique-sociale d'un pays; il n'existe pas de méthode unique d'évaluation applicable à toutes les situations. Le sous-emploi résulte en effet d'un ensemble de facteurs parmi lesquels on peut citer : a) le degré auquel un système économique est capable d'utiliser les réalisations de la science et de la technique modernes afin d'augmenter le rendement du travailleur; b) le désir de la population de travailler davantage; c) la possibilité pour l'économie de fournir l'ouvrier le travail qu'il désire. On peut combiner ces divers facteurs, ainsi que d'autres, dans l'évaluation statistique du sous-emploi; c'est ce qui a été fait à Porto-Rico.

Le Commonwealth fait exécuter quatre fois par an une enquête démographique maison par maison. On pose aux personnes employées au moment de l'enquête un certain nombre de questions destinées à déterminer si, malgré leur désir de travailler un plus grand nombre d'heures par semaine, l'économie du pays n'a pu permettre une augmentation de l'emploi. On leur demande notamment : 1) Avez-vous cherché du travail en plus de celui que vous aviez déjà ? 2) Pourquoi n'avez-vous pas travaillé un plus grand nombre d'heures la semaine dernière ? 3) Vouliez-vous travailler un plus grand nombre d'heures la semaine dernière ? En outre, on demande aux agriculteurs qui travaillent à leur compte s'ils vendent ou s'ils consomment la plupart de leurs produits agricoles. Les sous-employés répondent en général à la définition suivante : agriculteurs qui travaillent à leur compte et qui consomment la plupart de leurs produits, et autres travailleurs qui n'ont pu obtenir autant de travail qu'ils l'auraient voulu (compte tenu de la réglementation de la semaine de travail).

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D'après une étude intitulée "Results of Tests on Measuring Under-employment Puerto-Rico : June and July 1952" (Bureau of Labor Statistics, Commonwealth of Puerto-Rico, Technical Report on the Labor Force, No 2, 1953) par A.J. Jaffe Elydia Fort de Ortiz.

x Seule la présente analyse d'introduction fait l'objet d'une distribution générale. Les participants qui ont été invités à assister à la séance mentionnée ci-dessus recevront en outre le texte intégral du document. Les autres participants au Congrès recevront le texte intégral sur leur demande.

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Observations on the Concept and Measurement of Underemployment  
With an Example From Puerto Rico

Elydia Fort de Ortiz <sup>1)</sup>

Observations on the Concept

The purpose of collecting data on any subject is to supply information on the basis of which an action program of some kind can be formulated. Such an action program, although it can include scientific research per se, generally involves some socio-economic program aimed at fostering economic development. Any such program is always man-made. One of the interests in measures of underemployment then is to provide some of the facts which will assist in economic development.

It follows that the concept of underemployment has most relevance only in a market economy or one in transition to a market economy. In an economy which is largely of a subsistence nature it matters little who does what or how much he does. The amount of work that a person does under such circumstances is a function of the ease with which nature supplies his food and other needs together with the efforts which he may care to exert. In short, in an economy which is largely of a subsistence nature, there is no man-made economic system which provides, or fails to provide, sufficient employment opportunities.

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1) Chief, Labor Force Section, Bureau of Labor Statistics, Department of Labor, Commonwealth of Puerto Rico.

It is observed, then, that underemployment can exist only in an economic system that, by the very way in which it operates, supplies or fails to supply sufficient employment opportunities.

#### Level of technological development

Within a market economy the level of technological development may vary considerably. Several centuries ago, when modern machinery and science were far less developed than they are now, a country had little choice with respect to its technological level; even if it used the most advanced machines and ideas known at the time, workers had to work long and hard hours and produced relatively little because worker productivity was so low. Having produced so little, of necessity they received little earnings in comparison with the modern worker using modern technology.

Among the nations of the world today, however, presumably technical knowledge is available and can be adopted if so desired (admitting, of course, that there are frictions to such adoption). One element in successful planning for economic development then involves the attempt to use modern scientific managerial and technical knowledge.

To the extent that a nation is not attempting to maximize its use of such knowledge, the workers of that country may be producing far less than they would be with modern technology. As a result they are receiving less income and therefore could be classified as underemployed. In short, one element in a composite definition of underemployment is the failure of the individual worker to be as productive as modern science and technology permit. Unused labor or inefficiently used labor can be considered as one aspect of underemployment.

#### Desires of the people

People live and work within a particular social and economic structure with which they are familiar. This structure describes for them the type of work

which they can hope to do and the degree of their productivity at this type of work. It also provides a framework within which they can estimate their own probability, more or less, for personal economic betterment.

Under such conditions, then, one of the crucial elements in the concept of underemployment centers around the point of whether the worker does or does not desire to perform more work and receive more income. The question might be posed, "everything considered, how much extra work is the individual willing to do for how much extra pay?" Obviously, it is very difficult to answer such a question in specific arithmetical terms. It can only be asked whether in general the person has a feeling that he is doing about as well as he can hope to do, or that conversely he has a real desire for more work, or more productive work, which would result in a higher level of living for himself, and tries to take some steps, however limited, toward attaining such additional employment.

It can be said, then, that if the economy fails to provide opportunity for such additional or more productive work which the individual desires, then he is underemployed. This, in turn, implies that underemployment is involuntary for if he wanted more work or more productive work and could get such work on his own initiative, then he cannot be considered as underemployed if he does not have such work.

#### Role of government

Granted that the element of involuntariness is a part of the general concept, then we are back to our original question regarding the intentions of the government with respect to economic development. To the extent that the government feels obligated to foster economic development, the government has a responsibility for providing one way or another the additional work or better employment opportunities which the citizens may desire. This, however, is a relative matter.

Practically speaking, no government can hope to fulfill all the desires

of all its people. It can hope to provide fuller or better employment only for certain segments of its population. The other segments, it would have to insist, are as fully employed as the economic conditions at the moment will permit, and that it is most important to do something for those segments which are economically worse off or in terms of our concept are "more underemployed."

### Summary

Underemployment is a relative measure, and there is no uniquely correct level of activity below which it can be said that workers are underemployed or above which they are fully employed.

Rather we have five factors involving: (1) an economy which is in the process of being developed or is being expanded to higher levels of economic activity - i.e., an expanding market economy; (2) an economy which can avail itself of modern science and technology so as to increase the output per worker;\* (3) desires on the part of the people to do more work, or more productive work, which would result in a higher level of living; (4) the inability of the economy to provide such desired work; (5) the assumption of the government of the responsibility for fulfilling the desires of at least certain segments of the population.

These elements can be combined into a statistical measurement as will be seen below. Since all the elements involved in such measurement are necessarily relative to the time and place and specific characteristics of the social and economic structure, any statistical measurement itself must always be relative. Nevertheless, even relative measures can be highly useful in measuring the degree of economic development achieved over time.

Finally, it is believed that the concept as developed in this paper is a useful one and applicable in many countries. Because economic and social

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\* These first two points are developed in greater length by Chiang Hsieh, "Underemployment in Asia, I. Nature and Extent," International Labour Review, Vol. LXV, No. 6, June, 1952.

conditions may be quite different in different countries, however, the specific details composing the statistical measurement may differ from country to country. In the case of the Commonwealth of Puerto Rico cited following, this concept was applied within the social and economic framework of that area. For other countries the specific technical details to be cited may or may not apply in exactly the same manner as in Puerto Rico, depending upon their own unique national circumstances.

#### Measurement of Underemployment in Puerto Rico\*

The procedures currently used by the Commonwealth Bureau of Labor Statistics in its periodic sample survey of the labor force are modelled after those used by the United States Bureau of the Census in its Current Population Survey. These procedures can be briefly summarized as follows:

The population covered is that of civilians who are not living in institutions, and are fourteen years of age and over;

This population is subdivided into three groups:

- 1) persons who were employed during the specific period covered by the surveys;
- 2) persons seeking employment, the unemployed, during this same period;
- 3) persons neither employed nor unemployed;

The labor force consists of the total of persons in the first two groups, namely, the employed plus the unemployed;

The remaining persons are those not in the labor force.

In Puerto Rico statistics on the number of persons in and out of the labor force and on employment and unemployment have been collected since March, 1946, and on a quarterly basis since July, 1952. In order to fit these statistics more closely to the requirements of Puerto Rico, it was decided to try to subdivide

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\* See also, "Results of Tests on Measuring Under-Employment in Puerto Rico: June and July 1952," Bureau of Labor Statistics, Commonwealth of Puerto Rico, Technical Report on the Labor Force No. 2, 1953.



the employed group into two components, the relatively fully employed and the relatively underemployed.

#### Questions asked

Three questions were designed to obtain a relative measure of the extent to which persons who were employed at the time of the survey, nevertheless, may have desired and have been available for more work or more productive jobs. These questions were asked of all persons who reported that they had worked during the survey period.

The questions were coached in terms of wanting more hours of work rather than in terms of wanting more money. It is obvious that inquiring about the desirability of more money will elicit a unanimous "yes" from everyone, whereas inquiring about working hours will serve better to differentiate between those more desirous and those less desirous to obtain additional or other employment.

The question: (1) "In addition to working, did you also look for work?" is a direct measure of desiring and seeking whatever unfilled jobs the economy may have had. The questions on (2) "Why didn't you work more hours last week?" and (3) "Did you want to work more hours last week?" are indirect measures of such seeking. The intent of question number 2 is to differentiate between those people for whom the economy was unable to provide more work but who were desirous of having more work, and those people who, whether more work had been available or not, did not choose to work more hours. The purpose of question number 3 is to serve as a check on the answers previously given. It is not enough that the person reply that he had not worked more hours because more work was not available; he must also say that he had wanted to work more hours.

In addition, persons who were self-employed or unpaid family workers in agriculture were asked about the farms which they operated; how many cuerdas were operated; what was the principal crop raised; and was most of the crop consumed by the farmer and his family, or sold or traded.



## Methods of analysis

For all persons except those self-employed in agriculture the answers obtained to each of the three main questions were dichotimized, as follows:

"In addition to working, did you also look for work?" was divided into two categories: Yes and No;

"Why didn't you work more hours last week?" was divided into two categories: answers indicating that they had desired but could not obtain more hours of work, and all other answers;

"Did you want to work more hours last week?" was divided into two categories: Yes and No.

Each question was then cross-classified by the remaining two so as to obtain a table of answers of dimensions  $2 \times 2 \times 2$ . In this way it was possible to pick out patterns of responses - patterns based on the answers to all three questions. Hence, a person could be classified as under-employed only on the basis of his answers to all three questions; the answer to any one question by itself need not be taken as sufficient indication of desire for additional employment to warrant classifying the person as under-employed (except as will be noted below).

All persons who worked during the survey period but did not answer the questions so as to indicate under-employment are considered as fully employed, irrespective of the number of hours worked per week. If the person does not desire more work, then he is fully employed.

For the self-employed (including unpaid family workers) in agriculture the analysis centered about the size of their holdings and whether they tended to raise commercial crops or crops largely for their own consumption.

## Summary of results

1. The great majority - some 95 percent - of those who replied that they had looked for work in addition to working during the survey week also answered that they had been unable to obtain more work and had desired such additional work. Therefore, the single answer that the person "had looked for work also" could be

taken to indicate under-employment, subject to the limitation on hours worked per week to be mentioned in paragraph 3 below.

2. Under conditions of a scarcity of jobs it can be expected that many persons would not actively seek work because they believe that jobs are unobtainable. Accordingly, the group which did not seek work but reported that it could not obtain more work and had desired more work also could be classified as under-employed. Among these persons the great majority who replied that they could not get more work also said they had wanted more work.

3. It was felt that considering the conditions of the Puerto Rican economy persons who worked 35 hours or more per week would have to be considered as fully employed without reference to their answers to the above questions. It could be argued also that this upper limit should be reduced to 30 hours. As of the moment we have made no decision on whether to use 30 or 35 hours but are using both limits, in conjunction with the above questions, to determine under-employment among employees.

4. For self-employed persons in non-agriculture and in commercial agriculture it was believed that hours worked per week have little relevance. Indeed, in many cases a very long work week simply indicates that the work is largely uneconomic (as when a peddler spends most of his time just waiting for customers). Accordingly, these people were considered as fully or under-employed in accordance with their answers to the questions asked, and without reference to hours worked per week.

5. Self-employed farmers (including unpaid family labor) who operate farms the produce of which they themselves largely consume, generally operate tiny farms and raise minor crops - mostly vegetables and starch crops. It is argued that these farmers are neither employed nor unemployed in the same sense as persons who work within the market economy. If such a person seeks a job within the market

sector, he can be considered as unemployed. If he does not seek such work, his farm labors do not contribute to the growth of the economy, and he could be considered as outside the labor market - i.e., outside the labor force. In Puerto Rico only a very small proportion of all persons engaged in agriculture are such subsistence farmers - fewer than 10 percent. Therefore, we simply allocated them to the under-employed category without reference to their answers to the questions on wanting more work, or on hours worked per week. Whether such an allocation would be equally valid in other countries can be determined only after investigating the specific conditions of such economies.

### Concluding remarks

Four aspects of the question on how to measure under-employment were considered, as follows:

1) We asked a number of questions designed to find out whether the people themselves felt that they wanted, or did not want, more work than they had;

2) We analyzed the type of farm worked by the self-employed farmers who reported that they consumed most of their produce;

3) In addition, certain policy considerations were taken into account involving the possible obligations of the state toward helping to provide additional employment;

4) Finally, methods of handling the data in the office had to be considered and the most practical, simple and efficient office procedures devised.

On the basis of the above considerations, we arrived at the following composite definition of under-employment:

A) All employees who worked less than 35 hours, or less than 30 hours in the survey week, and replied that they had:

a) looked for work in addition to working;

B) All self-employed farmers (including unpaid family workers) who reported that they consumed most of the produce from their farms; i.e., those tending to be outside the market economy;

C) All other self-employed persons (including unpaid family workers) irrespective of the number of hours worked, who replied in the same way as the employees (see paragraph A above).

Finally, we wish to emphasize that all persons who did not reply in the above manner and who worked one hour or more during the survey week are classified as fully employed.

In summary, it is believed that there is no uniquely correct measurement of under-employment. Rather there is a continuum ranging from none or little employment to the fullest employment conceivable; this continuum can be cut at any point desired in order to dichotomize that section of the population conventionally called the "employed." In order to cut this continuum, we used a relative measure of the desires of the people of Puerto Rico for "more work," within the existing social, economic and political structure.

In other countries having different conditions other specific procedures tailored to the needs of such areas may be more appropriate than those briefly described above. It is believed, however, that the basic framework here presented has applicability over many parts of the world.