Theory and Empirical Studies on Individual Labour Supply

Daniele Tirelli

European University Institute

Florence

Thesis submitted for assessment with a view to obtaining the Degree of Doctor of the European University Institute.

Florence, April 1985

(42)
e

INDEX

INTRODUCTION

FIRST PART: Individual Labour supply in Economic Thought

1.1: The Ancient World

1.2: Mercantilism: how to reach "full employment" and achieve national economic strength by avoiding idleness and labour scarcity

1.3: The Classical Economists: the discovery of demographic and social determinants of labour supply.

1.4: Marx and Engels' theory: the "reserve army" and the growing misery of the working class.

1.5: W.S.Jevons: the marginalist and utilitarian approach to the labour market

1.6: Other references and contributions of XIX century economists

1.7: The economics of individual labour supply at the beginning of this century

1.8: J.M.Keynes and the 'General Theory'

1.9: L.Robbins:the positivist approach to labour economics

1.10: Slavery and the free labour market: is there a historical antagonism between the two?

1.11: F.Knight P.Douglas and the Chicago School

FIRST PART: REFERENCES

SECOND PART:Empirical Studies of Individual Labour Supply

1.1: Introduction

1.2: Static models concerning the allocation of leisure and consumption

1.3: The Linear Expenditure System

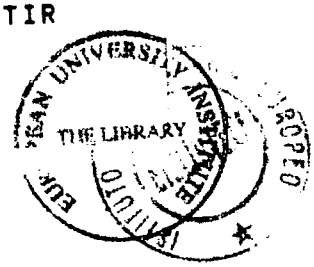
1.4: Allocative models with disequilibrium effects

1.5: Rotterdam models of consumption-leisure allocation

1.6: Dynamic Linear Expenditure Systems

1.7: The Stone-Hothakker-Phlips approach

1.8: Dynamic demand systems extended to rational intertemporal choices



1.9: A survey of empirical results of the ELES

1.10 Some extensions of the empirical results of the ELES

APPENDIX I.1: Long-run demand functions in dynamic expenditure systems

CHAPTER II: An empirical Analysis of Italian Household Expenditure on Leisure and Consumption

2.1: Introduction

2.2: A Static ELES of Italian households

2.3: Econometric procedure to estimate an ELES and computation methods

2.4: Empirical results of a static ELES

2.5: A dynamic ELES of Italian households

2.6: More on dynamic ELES of Italian households

2.7: Conclusions

APPENDIX II.1: A simple scheme of an intra-family allocative model of leisure and consumption

APPENDIX II.2: Data and statistical sources

CHAPTHER III: A Comparative Study of the Allocative Choices of Consumption, Saving and Leisure in Six European Countries

3.1: Introduction

3.2: Theoretical foundations of a TELES

3.3: A two-stage allocative model of consumption, saving and leisure

3.4: Introducing habit and stock effects

3.5: On the cross and own price elasticities of a multistage TELES

3.6: Data and statistical sources

3.7: Empirical results

3.8: Some comments on the empirical results

CONCLUSIONS

SECOND PART: REFERENCES

INTRODUCTION

Taking W.S.Jevons' line of argument, we can restate that the most important economic problem for an individual is how to satisfy his needs with the least possible amount of labour. People work to consume , but they also work to save in order to enjoy more leisure immediately or in the future. Freedom to choose thus implies a flexible balance between leisure and wealth. "He does not seem to me to be a free man, who does not sometimes do nothing " - Cicero wrote.

But in turn, leisure has an economic value only when it is freely chosen. Idleness arising from involuntary unemployment does not fit into the concept of leisure. It is a deprivation and not a privilege. (G.Soule (244), p.20). On the other hand work could not merely imply disutility. L.Von Mises (265),for instance, distinguishes between "introversive" and extroversive labour. Introversive labour may bring about results that other people would usually attribute to the disutility of labour. But even though introversive labour can influence the supply in the market, it is only extroversive labour that concerns catallactics and therefore, economic theory. This is the kind of labour that is performed in order to reap rewards.

From primitive societies until our days :

> "Labour produced wealth; accumulated wealth became concentrated in a few hands; and leisure became the grand prize of those few who possessed wealth. Labour was the lot of the great majority. Historically, extended leisure depended on some kind of surplus wealth, public or private, where one or many might draw sufficiently for maintenance" (T.Woody,(284),p.4)

The relationship between labour, income and wealth therefore has always been the focus of economic thought in all historical periods. Economic activity cannot be separated from human labour. "Time is the ultimate resource" - noted K.Boulding (23) This factor is naturally measurable by means of time intervals. Since human time is a scarce and non storable resource, it assumes many if not all the characteristics of an economic factor. On this basis it is possible to apply the economic method which derives from the marginalist paradigm or, in other words, the two structures:**adaptation** and **maximization** to interpret the historical evolution of the labour market and give rational explanations for its functioning. There is no doubt that the pure economic approach to the labour market disregards many important contributions from other human sciences. Labour has always been the most important of human activities and the decisive determinant of human behaviour. Labour is not valuable only because of its price (that is to say through a market exchange mechanism) but, as J.Lesourne (154) points out, it involves several factors including **social status and hierarchical structures, consumption patterns, household's constraints, individual and mass psychology,** etc. The economic approach only very recently began to embody all this within logically (and mathematically) coherent models.

The limits of an economic approach to human behaviour and to labour supply in particular (in the sense specified by G.Becker (11) are evident but one should not forget that there have also been many special difficulties in treating working time and leisure as any other scarce economic resource or good. Religious and philosophical preconceptions have always been

superimposed on an objective "scientific" analysis of the market of human time.

The aim of this work is first of all to simply verify how, the view of working activity changed greatly in response to social evolution, sometimes rationalizing existent labour relations and sometimes changing the existent social and economic order.

Basic assumptions on labour supply often reveal the nature of each economic theory, because they compel the student to clarify his ideas about men and their freedom, duties and responsabilities.

The second aim of this work is to add some further elements to the empirical literature that focuses on the measure of the intensity of the relationship between work and consumption. As a matter of fact, working hours are still a very controversial issue. For instance, no theoretical basis greater than that of the pre-war years corresponds to the rigidity of the antagonistic positions of unions and entrepreneurs on a shortening of working hours.

Above all there is still unanimous opposition to making working hours more flexible or,in other words, to letting the market play its role also in individual labour bargaining. Fixed and standardized working hours probably are an important factor of stability for the present regimes of industrial relations. Seen from the entrepreneurs' point of view, flexible working hours surely imply an endless and frequent process of labour and technical reorganization. Seen from the unions' point of view, flexible working hours would reinforce workers'individualism and a tendency toward a great diversification of jobs and functions.Perhaps this process could weaken unions' strength. Multiple hourly regimes adapted to specific needs of different social, sexual and age groups, would undermine the feelings of solidarity among people who share uniform conditions and who spend a great part of their life at the same place of work.

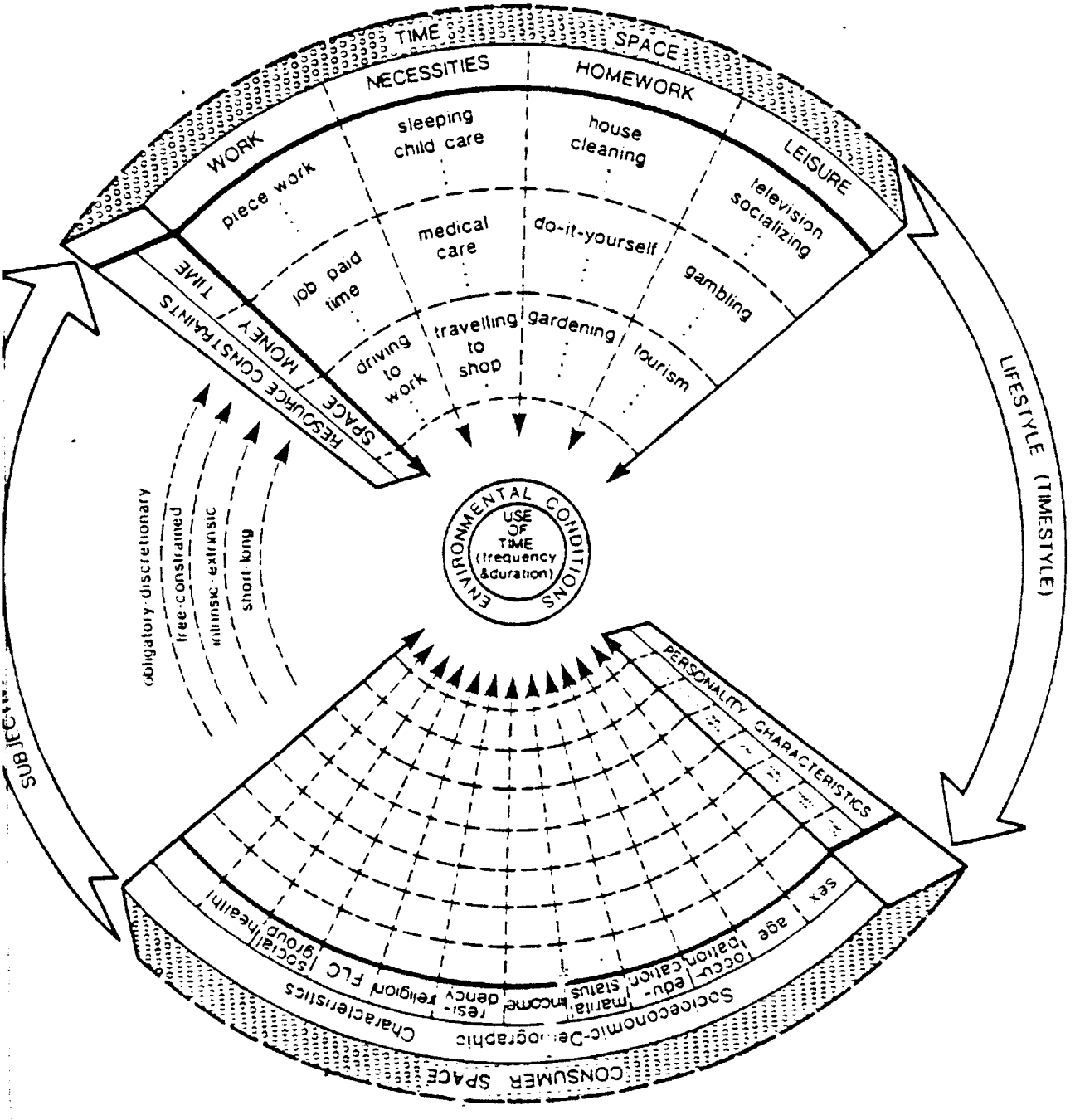
In this sense, unionism is in an awkward position. Its historical aim (especially in its marxist or leftist components) has always been that of decreasing the maximum length of the working day. But unions have implicity struggled to control also the minimum length of work. And whatever aim unions have had, they have progressively introduced elements of monopoly into the supply side of the labour market. For several years this strategy has been more and more difficult to apply since new technological waves change professional status and increase labour mobility among productive sectors. New standards of living, and new and higher levels of education destroy the past standardized working regimes.But above all, in high mass consumption economies, the social images of workers and consumers cannot be separated. But there is a third element that co-exists with the former two: that of a growing number of private or domestic producers endowed with their own capital. Income produced from work is estimated for the U.S. to be around 40-50% of paid and measured income. This fact cannot be without consequences for consumption and work effort. At the same time paid working activity covers less than one quarter of the available time of a man of working age. "Leisure" or time free from work therefore is dimensionally the greatest component of human life.

The intricacies of the problem can easily illustrated, for instance by means of the conceptual scheme elaborated by Feldman-Hornick.(67) (See fig.1). According to them the share "work" appears to be related to many other factors which interact with each other.

There is however another dimension which further enlarges this conceptual scheme. The assumption of individual agents engaged in economic activity is probably not the most appropriate and attention should focus on households, which can be defined as a group of people, economically and socially

FIGURE 1

A TIME ALLOCATION MODEL



interdependent on a day-to-day basis. (G.J.Linge(158)).

As regards the attitude toward work, a) households allow us to take advantage of economies of scale in consumption activity. Working effort can thus increase less than proportionally with respect to household expenditure for market goods and services. On the contrary the tendency toward small familial groups or an individualistic way of life can increase individual labour supply and counteract the shortening of working hours.

b) Households come closer to intertemporal maximising behaviour. Their life span is considerably longer than that of their individual members. People living in a household therefore can work more than in the case of a purely individualistic way of life.

c) Households decrease the uncertainty related to the permanent flow of income. In other words unemployment of some of its members does not mean (as economic theories which generalize the figures of individual workers or single "breadwinners", assume) a dramatic alternative between full labour income or nothing at all.

d) Households only provide human capital investment and can delay the entrance into the labour market of new workers, or allow shorter working hours for them.

e) Households efficiently combine home production with paid work.

However there are no clear and fixed consequences of these and other observations. Individual labour supply (or, roughly speaking, working hours) can be motivated or demotivated without precise rules. And this is precisely the principal reason why the neoclassical tradition and the "new-classical" economists do not accept the concept of "involuntary" unemployment. Labour supply cannot be exactly measured. And, even though the demand for labour is the object of a relatively precise quantitative evaluation, the difference between supply and demand still remains vague and indefinite.

Frictional or structural unemployment for instance depends upon the factors mentioned above which continuously modify the quality of jobs, time and spatial constraints, social habits, etc., that is to say the basic determinants of the participation rate, working time. But also cyclical unemployment could derive from complex and economically rational households'behaviour. It is from the persuasiveness of the marriage which has been affected between the job search models of household behaviour and models of rational expectations responses to inflation that the "voluntariness" of unemployment has been succesfully rediscovered.(I.Rima (212))

But it is important to underline that even though the problematic issue of cyclical voluntary unemployment is presently concerned with the leisure-consumption relationship and the aggregate labour supply function, this approach is only a very specific extension of the neoclassical theory of consumption. The focus of this debate is in fact on the plausibility of the hypothesis of intertemporal preferences of leisure and consumption.

Yet there is another fact to be taken into account. All the former reasoning has been developed in terms of labour economics. Changes in working hours and participation rates are perhaps even more interesting for positive studies of demand and consumer behaviour. Besides the government's interest in the evolution, of aggregate demand, and employment, there also exists (and perhaps this is much more important) the interest of private and public entreprises in the allocation of such global demand.

There is no product which is not "time consuming". The marketing of many of them is strictly linked to the available free-time of buyers (video-recorders, motor-bycicles, sport clothing, books, newspaper, etc.). There are other goods that, on the contrary, are "time saving" and that free time for further consumption (household appliances, cars, phones, etc.)

Consumer and marketing research have thus progressively produced empirical and theoretical contributions on working hours and household's leisure choices that are comparable with those of labour economics. The neoclassical approach therefore should be judged also in the light of the extensive production of interpretative schemes in all branches of practical economic interest.

At this point one is faced with the field of specific applied works based on the conceptual schemes of maximizing utilitarian behaviour subject to income and time constraints. This line of research has generally been developed by means of microeconomic analyses based on cross-section and panel-data. This kind of model has been developed in particular by the Chicago and American schools in general. There has been less enthusiasm for "classical" allocative models based on aggregate data. The average weekly hours in the U.S. have been,since the Second Word War,rather stable. It is obvious therefore that it has appeared much more interesting to study the influence of specific factors like income distribution, race. sex, fertility and education on individual labour supply etc. rather than the general relationship between aggregate consumption and aggregate labour supply. In Europe, where in the same period rapidly decreasing working hours have had a great impact on consumption and standard of living, the interest in such models has been equally scarce.

The extension to European data of the joint allocative models can however, at first sight, be rather discouraging. The available statistical information on individual labour supply is in fact of very poor quality. But there are other great problems besides those of a correct measurement of labour supply.

a) The extension of the neoclassical microeconomic postulates to national aggregates cannot be coherently justified from the theoretical viewpoint. This kind of modelling can be carried out only for purely empirical aims.

b) From the empirical viewpoint the allocative models enlarged to include labour supply are very sensitive to different specifications and to different statistical samples. The elasticities derived from the estimated parameters are widely spread. What then is the utility of empirical exercises aiming at testing such economic functions by quantitative methods?

Some reasons can be put forward:

a) It is still necessary to confirm or contradict the conclusions of a few models which have already been tried.

b) It is always possible to get fresh information from new or longer series of data.

c) Empirical results even though they are based on rough data, reinforce the demand for a reform of the National Accounts to adapt them to new concepts of consumption of commodities, leisure and home-production.

The present work aims in fact to enlarge the knowledge of the theory of the joint allocation of leisure and consumption by testing simple econometric models on aggregate European data. There is also another aim to add to the former ones. The idea that these concepts are of recent origin and that they are the expression of extreme neoclassical abstractions, deprived of any roots in past economic theories is still common.

On the contrary it is easy to show that the topic of individual labour supply, is one of the oldest in economic thought and that it is more or less present in works of all the great economists, and that its importance has grown together with the growing standard of living in Western countries. But it should be noted that while the economic debate on rational expectations and the voluntariness of unemployment has recently absorbed great intellectual energies, it has made less effort to analyze the historical roots of such

theories.

The reconstruction presented in the First Part begins with the origins of economic thought and ends with the theoretical contributions given immediately after World War II. Among the contributions of the following years only those regarding the enlarged demand systems, which utilize aggregate time series data have been examined. This is the argument of the first chapter of the Second Part . The remaining two chapters illustrate different specifications of enlarged demand systems applied, to new European data and with some original econometric specifications. Two separate bibliographies collect the necessary references for the reader interested in enlarging his knowledge of the specific contributions which are alluded to in the text.

· 1.1:The Ancient World

The economics of work and leisure, conceived as two contradictory aspects of human life is typically a subject of interest in industrial societies. In primitive societies however the distinction between working activity and leisure often had no meaning. (K.Thomas (253))

This separation was born when the division of labour became the dominant principle of industrial organization. However it is little more than a century ago that economic theorists formalized the relationship between work and leisure and defined clear and precise rules in the allocation of human time through a calculus of Pleasure and Pain.(J.Voss, (267),p.91)

For the Greeks and their slave society, work was a purely instrumental activity regarded as beneath the dignity of a free man. The valued human activities were as Aristotle codified, the intellectual and political ones; in other words, leisure, which was spent in cultural and agreeable pursuits. (R.Mondolfo (185)).

The Greek term $\sigma\chi\omega\lambda\eta$ (School), which had a similar meaning to our leisure, makes clear that time devoted to learning implied freedom from working activity. Plato stressed that this was reserved for those whose parents were wealthy enough.(A.A.Trever (260)) The same observations appear later in Cicero's letters. Labour and leisure were thus conceived as different social characteristics of separated classes

For all the slave societies, labour supply (conceived both as the number of men available for work, and as the maximum feasible working time) was a very important problem, because it could represent economic strength or, the major constraint of the productive capacity of those societies. Columella, Varro and Plinius devoted pages to the study of the productive efficient use of slaves; they also compared the alternative use of free and slave labour. (G.Tozzi (259)). Wealth, significantly, was measured by the number of slaves owned.(C.A.Yeo (268))

The concept of a slave labour supply as an economic and exhaustible resource was certainly intuitively clear to the Roman legislators, intellectuals and political leaders. The slave market was linked to imperial expansion and thus to military campaigns. The continuous search for new slaves therefore became one of the strongest reasons for aggressive and expansionary policies of the empires of those ages. But, at the same time, the growing scarcity of a new "animal" labour supply became another one of the causes of the decline and fall of the slavist society.(E.Roll (220))

Historians agree that a slave economy is linked to belligerant nationalism. M.Bloch (21),(22), points out how the progressive retrogression of slavery in the Roman empire was accompanied by the "relative peace" of the first two centuries A.D. The same author underlines how growing attacks from Barbarians and Persians during the third century, and the great invasions of the fourth and fifth centuries gave a fresh impulse to the slave trade.

The disappearance of this kind of economic system was therefore gradual. E.Ciccotti's famous study (34) emphasizes the length of time which the economic process took to gradually adapt productive methods and political institutions to the new scarcity of labour. Slaves and "free" peasants, who were constantly mutually opposed in the Ancient World, began to increase their social and economic weight during the last period of the Roman empire until the complete disappearance of traditional slavery had occurred.(M.Flinn,(77))

Christian doctrine played only a secondary role in this process.

"Christianity did not condemn slavery. The Church merely forbade committing baptized persons to thraldom, but this ban was presumably no better respected than a great many others (...) The most obvious effect of the intrusion of Christianity was to bring about a recognition of family rights for the unfree" (G.Duby, (58),p.32)

Like all the ideologies which become dominant Christianity had to reach a compromise with the social and political reality. Labour scarcity in the early Medieval age was such a great problem that:

"The Synod of Adge in 506 and the Council Yenne in 317 forbade abbots to emancipate the dominial slaves which they had received from private individuals "for it is unjust that slaves enjoy freedom when the monks are working every day on the land"" (R.Doehard, (56),p.27)

The scarcity of labour was so great that it caused a new upsurge of slavery in the first centuries of the Middle Ages. And moral principles were neglected when faced by such a reality, so that "it was even necessary to forbid ecclesiastics to take part in raids to capture slaves" (R.Doehard, (56),p.28)

Official church doctrine did not encourage any radical subversion of labour relations. The Council of Gangra (324 A.C.) excommunicated those who invited slaves to abandon their owners. Even the great theologians usually chose a cautious approach to this controversial social issue. St.Paul taught the owners to be human and friendly with their slaves, though at the same time he asked slaves to be obedient and docile. Many quotations could be cited to demonstrate that Christian thought showed little opposition to the existence of slavery. Yet the new religion gradually did help to rationalize more and more new economic relations which were essentially based on serfdom.

During the Christian medieval ages, labour was conceived of in a completely different light. Work, which was renamed **Artes Serviles** by St.Thomas Aquinas, substantially had no intrinsic utility. It was simply the means to satisfy the purely trivial necessities of life. This does not mean that hard work was not appreciated. On the contrary leisure was seen as idleness and was severely condemned. "If any would not work, neither should he eat"- was part of the teaching of St.Paul. Indeed some monastic orders (like those of St.Basil, St.Benedict, St.Jerome, etc.) exalted labour as an ascetic practice. Recreation, dancing, games, races, etc. were often officially deplored. The fundamental dicothomy was between working and spiritual activities. The final end and the real utility of labour were man's supernatural aim. Human effort, at least from a theological viewpoint, did not raise problems of efficiency and, at the same time, it was ruled by a complex religious calendar aiming to permit celebrations and spiritual duties within the working days.

As Thomas noted, labour regulations in those times were still showing the strong influence of primitive customs:

"The close relationship between the agricultural cycle and the liturgical year, with its blessing and processions, shows that the association between technique and ritual was still very close, just as do ceremonies of craft guilds with their oaths and initiations" ((253))

Within feudal agrarian economies, labour supply lost its former relationship with "macroeconomic" determinants and instead became more linked to "microeconomic" factors. Wars were no longer an opportunity to increase the productive capacity of a country by the absorbtion and exploitation of a foreign labour force. After the fall of the Roman empire, slaves' prices increased considerably. This was a determinant cause of profound changes in the labour organization of great landed properties. Tenancy spread progressively. The landowners obtained slaves from domestic procreation and let them live in their home. (G.Duby, (58),p.40)

> "In this period great landowners seem to have discovered that it was profitable to marry off some of their slaves, settle them in a house and make them responsible for cultivating its appurtenant lands and feeding their own families. The process relieved the master by reducing costs of staff maintenance, generating enthusiasm for work on the part of the servile task-force, increasing its productivity and ensuring its replacement since these slave couples were entrusted with seeing to their children's upbringing themselves until they became of working age." (G.Duby, (59),p.40)

The new agricultural structure of production, which was born from the obsolesence of the **latifundia**, was centered on the power of landowners, who dominated a great number of dependent (but formally free) peasant families (**coloni** and **servi casati**) through a pyramidal and complex hierarchy. A great number of slaves became responsible for supporting themselves. They paid their master a quota in kind for the rent of their own plot. It is however difficult to understand clearly what was meant by the word freedom in that period. The **seigneur** had only limited responsibility and interest in the minimum welfare of his serfs, whereas they had a great number of duties toward him.

Wrote R.H.Tawney:

> "The very essence of feudal procerty was exploitation in its naked and shameless form, including, as it did, compulsory labour, additional "corvee" at the very moments when the peasants' labour was most urgently needed on his own holding, innumerable dues and payments" ((251), p.69)

But the most evident inheritance from slavery was perhaps the discouragement of labour mobility. One must however make this observation with caution because a partial flexibility existed even in those times. The dispersion of the former large groups of slaves who lived in the latifundia was creating the conditions to make peasant status more uniform by smoothing over distinctions between free and unfree peasants. Matrimonial segregation slowly disappeared between the two groups and this fusion was a cause and an effect of demographic expansion of the rural population and of its growing mobility. There are few doubts however that the medieval social framework made an efficient allocation of human efforts more and more difficult (at least for our present criteria of maximum productivity of labour, land and capital).

In the medieval ages the concept of **unemployment** was completely meaningless. As J.A.Schumpeter wrote, the structural design of medieval society excluded unemployment (230). The labour force appeared as a fixed

quantity, encapsulated in small communities where consumption fluctuated around minimum levels. It is therefore inexact to talk of a "labour market". Instead the productive structures were exposed and dominated in the long-run by catastrophic exogenous events, which destroyed the balance between the demand and supply of labour for decades. (J.C.Russel (222), B.J.Roger Mols (218)). The Black Death epidemic, for instance had long-term consequences on the supply of labour and modified the relative social weight of jobs and professions wich resulted in great changes of wages and wealth distribution. (W.Abel (1))

From the "microeconomic" point of view, however, the "economic agents" were paying great attention to labour supply determinants. The peasant family was forced to behave as a collective productive unit. Agricultural contracts and customs implicitly determined that the family be large enough to exploit all the soil's economic productivity, but not too large to bring about a negative marginal productivity. Of course this was a very difficult equilibrium to reach and the consequences were often starvation and famine. There is an extensive literature on birth control in the medieval age. (W.W.Langer (147), T.McKeon (175)). As a matter of fact, contrary to the formal principles of the Christian doctrine , population was controlled by several means, some even particularly cruel such as infanticide and exposure. But above all labour supply was controlled by the abundance of personal restrictions which were imposed on population movements and on the style of living of peasantry (education, marriage, etc.). K.Wicksell (278) noted that also monastic life or ,for instance, the "two-child system" was a kind of restriction which became superfluous in the following centuries because of high infant mortality and the spread of epidemics.

Labour supply has thus been generally ruled for centuries by factors exogenous to economics which condemned the majority of the population to the "iron law" of subsistence. But the term "exogenous" deserves a clarification W.Abel cites for instance, the Deutsche Chronik (1538) by S.Frank and writings of U.Von Hutten, where wars and epidemic diseases were seen as necessary remedies for Germany's overpopulation. These "natural laws" must have appeared so obvious that, three centuries later Classical economic assumed them to be the long-term laws governing labour supply. The causal chain of "exogenous" factors (wars, plague, etc.)- population and labour force decrease - decreasing food production, produced long-run cycles in prices and wages. This vicious circle was broken only by the dawn of the industrial revolution. From this viewpoint therefore the demographic downturns and stagnations of the XIV-XV and the XVII-XVIII centuries were a consequence of historical events which could not be considered "endogenous" in the Malthusian sense, but that acted as Malthus hypothesized.

> "The famous theories of Malthus and Ricardo on economic growth were deeply influenced by the contemporary situation. Between the XVIII and XIX centuries, several writers tried to explain the disproportion between prices and wages, by means of approaches which differed from those of the two classical English economists, simply because a large part of them were concerned only with the contemporary situation: meanwhile Malthus and Ricardo, who introduced "eternally valid" premises, were deducting from the particular a general economic theory" (W.Abel (1),p.302)

After 1500 the catastrophic decrease of population stopped and the demographic trend turned upward. Technical progress in handicraft, in transport and trade, made possible a slow, but constant growth of population.

Agriculture too reacted slowly but positively to the stimulus coming from new trades and markets. The great innovations of the Medieval age spread even if at a different pace in different European regions. Yet the medieval economic and social institutions could not have absorbed the profound stresses arising from the economic structure. In particular the growing mobility of labour was eroding the feudal constraints , and producing new phenomena such as mass unemployment, vagrancy and a widespread poverty which were linked to urbanization. Under the pressure of expanding commerce and economic growth, old structures which ruled every economic activity (serfdom, guilds, etc.) broke down.

In some sense, the merging of the concepts of poverty and unemployment had been anticipated in England in the fourteenth century by the Statute of Labourers. This law required that all able-bodied men and women under the age of sixty and without visible means of support should accept employment, at fixed wages; it also forbade giving of alms to able-bodied unemployed. (P.J.McNulty (177)). As we will see this was a typical answer to nationalist concerns and was also an extremely powerful stimulator of economic growth.

On the other hand, the popular mass demand for immediate improvements in standards of living and labour conditions (which accompanied and followed the industrial revolution) had been anticipated in those times by the **Utopians**. Thomas More, P,C.Plockhay, T.Campanella and others, dreamed of a reduction of working time to six or four hours a day, as a basis for human satisfactions. But leaving aside these comments, one can conclude that Medieval economic thinking was quite unable to cope with the new challenge.

The demographic catastrophes unbalanced the former distribution of jobs and professions and produced explosive combinations of unemployment and labour scarcity. In over-populated areas unemployment and food shortage were the causes of the spread of violence in every-day life. (J.H.Elliott (62)). The relief from plague and famine was not accompanied by a renewed social stability. **Mass poverty, vagrancy and criminality** were the by-products of economic growth and thus became the objects of public concern (J.A.Garraty (94)) The late XVI century societies were extremely conservative. Social tensions were not even mitigated by the enlargement of the geographic borders. Overpopulation did not find its "natural" solution in mass migrations and colonial expansions. Geographic discoveries and the enlargement of the areas of international trade were carried out, oddly enough, firstly by Portugal and Spain, two countries without such a specific problem (E.E.Rich (210))

It is interesting to note that labour scarcity in the XVI-XVII centuries was not always a point in favour of workers' bargaining strength. Labour scarcity stirred up authoritarianism in the ruling classes. East and central Europe's peasantry during the XVII century was subject to more and more restrictive labour laws which were attempts by landlords to counteract labour mobility. While singly or collectively peasants began to evade and defy the laws landlords tried to freeze labour relations by extending their claims on the labour by making peasant subjection hereditary. This meant a return to conceptions of forced labour.

> (...) workers were so precious as rent and tax-payers, as field or house servants, that they and their children had to be tied to a domicile as firmly as possible. It was not in the least a matter of ejecting peasants from their lands in order to enlarge the domain farms, a development common enough in both earlier and later periods. It was the no-less brutal process of binding them fast to lordships. (...) Legislation endorsed the decline (...). It built

up a legal framework in which a scarcity of labour did not help the labourers" (J.Stoyle, (246),pp.31-32)

During the following centuries two apparently contradictory tendencies developed within European economies. The first was a search for a new labour force (negro and American indian slaves) for colonial dominions. The second was an overabundant labour supply in many European countries.

It is well known, for instance, that from the Marxist viewpoint the progressive impoverishment of the peasant class was a premise for "primitive accumulation". Therefore the fall of real wages and the arbitrary expropriation and incorporation of the land of the small peasantry which followed the **enclosures** legislation in England was a means to create an immense **reserve** army for the developing urban manufacturing industry.(Baak (8),J.Chambers, (37),N.Crafts,(49)). This is a vexed question. W.Sombart has already objected to the importance attributed to enclosures. In some cases at the end of the XVI century, enclosures absorbed instead of diminished the labour force. Other modern historians have pointed out that the fall of real wages has been over-emphasized. But besides the unresolved problems there are few doubts that income distribution after the XVII century was altered in all the developing Western countries, and that a massive cheap labour force was available for new manufacturing industries.

The draining of huge economic resources from all over the world and their concentration in a few countries and in a few hands thus permitted a great accumulation of financial and productive means which set the **Industrial Revolution** in motion. Religion, philosophy and economic thought prepared the way for and rationalized this historical transition.

The leading economic classes of merchant and handcraft-men needed new arguments to justify their growing economic power to the other classes. Within the new social system that they were imposing, the masses of the poor appeared an ignominious waste of resources.

A great revolution came about therefore in the conceptual framework of the social meaning of labour and leisure. With **Calvinism** and **Protestantism**, both austere religions, labour became more and more a sort of "ascetic practice". M.Weber wrote referring to the Protestant ethic:

> "(...) on earth man must to be certain of his state of grace, "do the works of him who sent him, as long as it is yet day". Not leisure and enjoyment, but only activity serves to increase the glory of God, according to the definite manifestations of his will" ((271), p.156)

M.Weber also pointed out the obvious conceptual distance from the former medieval approach. In St.Thomas Aquinas' philosophy labour was only a necessary naturali ratione for the maintenaince of the individual and the community. But the maximum labour effort was not an individual moral imperative. Work was a means, and Christian theology admitted and exalted life without work if that life was seen as devoted to contemplation and prayer. Monastic life was the highest form of productivity in order to increase the **Tesaurus Ecclesiae**. On the contrary the Protestant ethic looked on labour as a calling:

> " the best, often in the least analysis, the only means of attaining the certainty of grace. And on the other hand the exploitation of this specific willingness to work (was) legalized , in that it also interpreted the employer's business activity as a

calling" ((271), p.156)

The important aim for the entrepreneur became thus the exploitation of all his own and other human resources for the glory of God. Leisure, regarded as an idle waste of time, was the first and in principle the deadliest of sins. C.Hill (114) observes that a hostile feeling toward the poor spread within bourgeois mercantilist society through Puritanism. Poverty was ceasing to be a sort of "holy state", which solicited human compassion and charity and masses of vagabonds, beggars and criminals had to be subjugated to a new iron discipline, both in work and in life.

> "It was a creed which sought not merely to purify the individual, but to reconstruct Church and State, and to renew society by penetrating every department of life, public as well private, with the influence of religion" -wrote R.H.Tawney (251), p.102

Further he noted that:

> "In their emphasis on the moral duty of untiring activity, on work as an end in itself, on the evils of luxury and extravagance, on foresight and thrift, on moderation and self-discipline and rational calculation, they had created an ideal of Christian conduct, which canonized as an ethical principle the efficiency which economic theorists were preaching as a remedy for social disorders" ((251), p.247)

The Calvinist religious ethic thus reclassified all social duties and rights. This explains the attacks on the Church's institutions for the relief of poverty through the use of alms. Society was seen no longer as a immobile medieval structure which made labour force movements impossible but as a dynamic system where everyone could get richer through labour. The feeling of guilt for being poor thus became a powerful propeller for economic growth. While the contrast between landlords and entrepreneurs grew until a compromise favourable to entrepreneurs was reached, the new religious climate prepared the necessary basis for the enrolment of the masses into the industrial working force.

1.2: Mercantilism:how to reach "full employment" and achieve national strength by avoiding idleness and labour scarcity

The Mercantilist school received and translated the above mentioned religious outlines into some cynical economic postulates. For capital flows the Mercantilists suggested their well known rules for international trade. For the labour market the precepts to realize the glory of God were transformed into nationalist goals of greatness and power. Their basic idea was that the nation could increase its economic strength only by means of a constantly growing population and strict laws against the "laziness" of the inferior classes to produce the maximum labour effort. (P.W.Buck (29))

The Mercantilists, however, were still partly influenced by the medieval inheritance. They were concerned in particular with income and wealth distribution rather than the functioning of competitive markets. For this reason, they did not develop a wage theory. They focused instead on wage administration in order to achieve social and national aims. In this sense they advocated a policy which would permit the largest and quickest accumulation of capital and, at the same time, the lowest cost of production to defeat international competition.

Mercantilism, however, departed from medieval economic philosophy when it introduced the idea of economic progress . Although this idea of progress applied only to emerging classes and certainly not to wage earners. E.Furniss noted:

> "(that) the rise of the trading classes to a position of dominance in the social and political structure gave the widest possible diffusion of the spirit of capitalism which had been generated within this group and that spirit proved then, as always, inimicable to the policies of restrictions and regulation which had flourished in an earlier day". But for labour market theories: "(...) no champion of laissez faire appeared (...) The interest of dominant classes remained on the side of regulation and the writers of the time continued to exhibit the habit of mind formed when the rating of wages was a matter of course"((91),p.159)

Workers had, therefore, to be constrained, by customs and rules, within a non-competitive structure in order to ensure the lowest price of labour to entrepreneurs. But this apparent pragmatism of Mercantilist thought inevitably led to a paradox. Just like all the old and modern nationalist policies which disregarded individual economic behaviour in favour of collective goals, mercantilism was populationist, without a specific interest in demographic consequences on human behaviour and social dynamics. The true interest of nationalist economic theories was (and is) in international competition. Profits came from trade, that is to say, from low cost policies. In the Mercantilist age, when production was highly labour-intensive, the most important problem was of course: how to maintain the lowest labour cost possible relative to foreigners competitors. At the same time this unilateral interest in the labour market led to the restrictionist and repressive outlook toward labour supply which is typical of nationalism.

> "They treated of labouring class as a group to be handled in the mass by the state (...) In all of this it is apparent that the rapidly spreading individualistic concept of society did not extend to the labouring class" ((91),p.114)

So wrote E.Furniss. But this raised a question:

> "Why, if the most useful should the labourers class have been the poorest of all social classes? How account for the fact that while the social observers of the period united in elevating the theoretical importance of the workingman, the cumulative effect of their policies was to reduce his share in the social income? (...) The labourer's unique social importance was attributed to his service to the nation in making possible a favourable balance of trade and, (...) the belief (was) that this service could be rendered effectively only by a labouring class kept in poverty" ((91),p.195)

In 1771, for instance A.Young (269) wrote:

> "Every one but an idiot knows that the lower classes must be kept poor or they will never be industrious" (...) "They must be (like all mankind) in poverty or they will not work"

These phrases sum up the amoral principles of Mercantilism, but they also present us with the important economic concept of a **backward bending curve of labour supply**. Higher real wages would have lowered labour efforts, both through shorter hours and both through a withdrawal of secondary workers from the labour market. This idea was held by social students for a long time. In 1669, T.Manly (170) declared that an increase in wages makes:

> "(...) the men have just so much the more to spend in tiple and remain now poorer than when their wages were less (...) They work so much the fewer days by how much more they exact in their wages"

This was not only, as P.H.Douglas (57) pointed out, a "backward bending curve" interpretation of short-run labour supply, but an assumption about an **elasticity of labour with respect to wages, that was equal to unity**. This assumption was essential to justify an unchanging standard of living and it was a common pitfall in relation to this topic that can be found in many dissertations up to now.

In Marx's **Capital** we find another example of the reactionary feeling of some Mercantilist economists. Marx cites the polemic debate between M.Postethwayth and an anonimous author of **An essay on trade and commerce** (1770). This last writer answered the progressist ideas of the first who argued for a shortening of the working week, for economic and industrial reasons, that:

> " we fatally experience to be true from the conduct of one manufacturing populace (that) mankind, in general is naturally inclined to ease and indolence,, who do not labour, upon an average, above four days in a week, unless provisions happen to be very dear. (...) Put all the necessaries of the poor under one denomination, for instance call them wheat or suppose that (...) the bushel of wheat shall cost five shillings and that he (the worker) earns a shilling by his labour, he then would be obliged to work five days only a week, if the bushel of wheat should cost but four shillings, he would be obliged to work but four days, but as wages in this kingdom are much higher in proportion to the price of necessaries (...) the manufacturer who labours four days, has a

surplus of money to live idle with the rest of the week" ((173),p.262)

The solutions which the same author proposed were drastic:

> ""The labouring people should never think themselves independent of their superior (...) It is extremely dangerous to encourage mobs in a commercial state like ours, where, perhaps, seven parts out of eight of the whole, are people with little or no property. The cure will not perfect, till our manufacturing poor are contended to labour six days for the same sum which they now earn in four days"((173),p.262)

Once more he advanced the idea of a House of terror where poor people should have had to work 12 hours a days for a pure subsistence allowance. Marx maliciously noted that, 63 years later, this proposal could appear progressive when compared to the resistance English entrepreneurs put up to the 12 hours limit for children.

Furniss further clarifies the cruel but logical coherence of this ideology which, in the extreme version, openly theorized the "social utility of poverty"

> "(...) the nation's destiny was conditioned upon a numerous population of unskilled labourers, driven by the very competition of numbers to a life of constant industry at minimum wages: "submission" and "contentment" were useful characteristics for such a population"((91), p.150)

However this interpretation of the Mercantilist age needs clarifying. For the economists of that time such a competitive labour market was certainly not sufficient to do away with the idleness of the poor. They therefore advocated strong intervention on the part of the State to regulate the matter. In a certain sense they were concerned above all with the means to reach and maintain full employment

Th.Firmin, a philantropist who spent his life attempting to alleviate the consequences of unemployment, stated:

> "It is better to lose something in a way that will make a people better and skilful than to suffer them to live in idleness" ((93))

Some earlier English writers like J.Bellers also tried to estimate "the cost of unemployment" (Jonhson (132), p.283) and many suggested fields where the State's agencies could employ poor people and force the idle to work. W.Petty, for instance, suggested:

> "Better to burn a thousand men's labours for a time, than to let those thousand men by non-employment lose their faculty of labouring" (...) Even building "a useless pyramid upon Salisbury Plain" or hauling the "stones of Stonehenge to Tower Hill" would be preferable to allowing the unemployed to remain idle" (quotations from J.A.Garraty (93))

Another cynical view can be found in the Fable of the Bees by B.Mandeville (162). In this work Mandeville advocated cuts in public expenditure on poor

children to ensure a sufficient number of ignorant people who would then be available for hard , dangerous and dirty works.On the other hand, there is also, as Keynes (135) pointed out, in Mandeville's pamphlet an interesting claim for "full employment" policies:

> "The great art to make a nation happy and what we call flourishing, consists in giving everybody an opportunity of being employed; which to compass, let a governments's first care be to promote as great a variety of manufactures, Arts and Handicrafts as human wit can invent; and second to encourage Agriculture and Fishery in all their branches, that the whole earth may be forced to exert itself as well as Man"((135))

Some other Mercantilist suggestions for a labour "supply oriented" economic policy can be found in D.Hume,J.Law, A.Yarrington, T.Sheridan, J.Child, D.Defoe, J.Hougton and others.

In summary, one can agree with J.A.Garraty (93) that, in the language of modern economics, the seventeenth-century writers saw labour as a factor of production, but almost ignored it as a factor of consumption. The mixture of authoritarianism, cynicism and sometimes true social concerns is an aspect that many economists of our century often have not sufficiently taken into account in looking at Mercantilist theory. Indeed, more attention should be given to the influence of Mercantilist thought in preparing the Classical synthesis by stressing the primacy of labour in production. The history of economic thought even though there is no absolute consensus generally agrees that after 1750, there were some late Mercantilist thinkers who gradually changed their attitude toward labour. (R.C.Wiles, (280)). A.W.Coats' paper (42) brought to light many hidden subtleities in Late Mercantilist thought. The Classical synthesis was preceded by many contributions that created a favourable climate for these new ideas. Coats quotes, for instance, Vanderrlint who already in 1734 supported economic incentives for labourers. Coats also re-evaluated works of Berkeley, Hume and many other Mercantilist authors, concluding that:

> "Despite continued concern with the moral and economic consequences of luxury consumption, increased spending by the lower classes, was not becoming accepted as inevitable, but was welcomed, as contributing to the preservation of an equitable and stable social order, and even as an aid to the dissemination of political democracy" (...) "Support for these views came from some of the most profound thinkers and acute observers of this day, and was consistent with a general movement of thought affecting philosophy- the influence of the Enlightenment, religion- particularly the decline of the Puritan conception of shamefulness of poverty and the rise of methodism, and literature- the emergence of romanticism and sentimentalism" ((42), p.209)

1.3: The Classical Economists: the discovery of demographic and social determinants of labour supply

The earlier industrial age presented many problems which involved new conceptions about the labour market. The industrial revolution was widely subverting customs and habits by creating a new industrial labour force. The agrarian society had made limited use of money. The great part of the population had been living largely by self-subsistence, while the market satisfied only a small proportion of their wants. The growing industrial sector, on the contrary, through urban development and the absorption of all the disposable time of the labourers, forced more and more people to live by exchange mechanisms.

Working-class families began to specialize more in the sale of labour power to purchase commodities marketed by profit maximizing firms (M.Perelman, (200),p.21). And this adaptation of working families was a painful process which transformed customary relationships between man and wife, parents and children.

D.Ogg (190) observes that for instance in England there was already a long tradition which had accustumed the poor to value their infant children as wage earners. The so-called Speenhamland System allowed for a concession from rates for each pauper child, whether legitimate or not.

> "Consequently, more perhaps than any other country, England had a vast supply not so much of man power, as a juvenile and infantile power.(...) Pauper children were sent off in "parcels" of ten or twelve, to each of which the Poor-Law authorities usually added one idiot child for good measure" (D.Ogg, (190),p.111)

Historians have often spoken of a worsening of living conditions of poor people at the time of the Industrial Revolution. (J.E.Thorold Rogers (256)). But this pessimistic idea seems strongly influenced by romantic anti-industrialist feelings. Some recent studies also accepted the hypothesis of a shorter average working time before the Industrial Revolution than after. (Freundenberger-Cummings (89)). According to these studies the annual work effort in the 17-th century should have been shorter than in the following centuries. As a matter of fact there were between 40 and 50 Church and secular holidays reducing the total amount of days and hours of work.(Solow-Temin,(243)) However this apparent abundance of leisure was determined by subsistence status. The 58 average weekly hours of the pre-industrial decades were the maximum feasible limit for a physically weak and under-nourished labour force. This hypothesis has many similarities with present phenomena in underdeveloped countries. A very poor diet in those days (as today) would have literally made it impossible to perform the 4000 annual working hours of Industrial Revolution times. (Clark-Haswell (41)). Thus only when the standard of living allowed for better nutrition were there exceptional conditions to transform enormous human "self-fertilizing" resources into industrial productive processes. To the Classical economists therefore the world seemed one where-as A.Smith wrote:

> "(...) the demand for men, like that for any other commodity, necessarily regulates the production of men; quickens it when it goes too slowly, and stops it when it advances too fast" ((239),p.80)

Labour was then partly freed from religious customs and traditions and was

becoming a sort of commodity with a precise relationship with its own price. (E.Hopkins (127)) But even if the supply side of this market did not seem dominated by the same clear rational economic law of other commodities, economic thought shows, in this preparatory period, an apparently strange diversion from the Mercantilist tradition. Economists who had been classified as precursors of the Classical school began to work out social enquiries by means of new conceptual categories.

W.Petty, who apparently shared Mercantilist opinions about the backward bending curve of labour supply, united them with pre-Ricardian (or pre-Malthusian) ideas about an alleged natural price of labour. If workers substitute leisure for consumption when wages were higher than this natural price, this confirmed the existence of something like a surplus-labour which had to go, on the contrary, to capitalist entrepreneurs who reinvested it.

J.Stewart was also interested in clarifying the determinants of wage-rates. In this sense his outlook was more advanced than the usual Mercantilist approach. For a Mercantilist, there was no particular interest in explaining wage determinants. The best economic solution would simply have been to maintain labour services' prices at the lowest level possible. This reinforced domestic price competitiveness and produced gains from international trade. For the pre-Classical writers however wages evidently differed for workers with different skills. The problem therefore was how to determine the right price for them. The theory of subsistence levels which was advanced by these economists in some sense represented an attempt to reduce this elusive issue to clear terms of demand and supply laws.

R.Cantillon, who is alleged to have proposed the first coherent theory of subsistence wages, does not seem, in the light of more modern criticism, to be so "mechanistic" as many historians of economic thought have believed. M.Bowley (24) points out that it is necessary to understand that this author was trying to isolate the issue of labour supply from many biasing effects:

> "What is remarkable (in his work) is that he set out to explain why subsistence levels determined unskilled wages and the means by which the supply of labour was adjusted to the subsistence wage. Again unlike most of his contemporaries he realised that it was relevant to explain how it was that subsistence levels might be above physiological subsistence and still determine wages (...) From another angle it is evident that what he was trying to do was to explain how certain economic variables, in an essentially static society, were determined" ((24), p.182)

To this extent, M.Bowley detects a subtle distinction between this intellectual abstraction and the apodictic "natural laws" of human and social behaviour. She underlines furthermore that he seems to have had much more faith than either Smith or Malthus in human commonsense.

With A.Smith the turning point in labour supply theory is reached. It is symbolic that the great Scottish economist, at the beginning of his intellectual evolution, still accepted the traditional concept of a backward bending curve. (238) In **The Wealth of Nations** (239) he changed his ideas radically and theorized a positive sloped curve.

This opened several questions that Smith solved only partially. The backward-bending curve of Mercantilist thought was a denial of subsistence theories that a priori assumed a fixed working time. Smith in his attempt to justify a positive relationship between wage and labour effort, assumed that working people substantially desired only future leisure, at the " ending of their days".Smith wrote:

"The liberal reward of labour (...) increases the industry of human people (...) A plentiful subsistence increases the bodily strength of the labourer, and comfortable hope of bettering his conditions and ending his days perhaps in ease and plenty, animates him to exert that strength to the utmost. Where wages are high, accordingly we shall always find the workmen more active, diligent and expeditious than where they are low." ((239), p.81)

The economic history of the following decades, however, shows that Smith's ideas were too crude. As modern microeconomic analysis has shown, increases in labour income remove the constraints to a purely subsistence status. Workers also desired "present" leisure and wanted shorter working days; the increase in the wage rate did not generate a pure substitution effect, but led rather to a decrease in working time through an income effect. When primary needs are satisfied, the workers also take into account a balance between income and the effort needed to earn it and , at the same time, they try to reach a point of maximum productivity that usually corresponds to shorter working hours. When the labourers eventually live in an affluent society, however, the effect of greater consumption and shorter working time on the productivity of labour can be negligible. Thus Smith's positive sloped supply curve could be justified. At any rate, Smith's hypothesis dominated labour economics for all the following period. A positively sloped curve of individual labour supply solved its own inner contradiction very well when it was considered from a macroeconomic point of view. In fact changes in real wages did not produce two opposite effects on working time and on the participation rate in this framework anymore. Other modern economists like Marshall and Wicksell dealt with this puzzling question but they did not revolve it. This simplification was strictly necessary to handle the problem of wage determination in terms of a competitive labour market. P.McNulty remarks that:

"(...)the difficulties presented for economic theory by the purchase and sale of labour are well illustrated in Adam Smith's analysis of wages, which shifts from short-run to long-run, from influences narrowly economic to those more broadly social, and from market to non-market institutional forces" ((177),p.49)

M.Bowley concludes that :

"It is perhaps idle to speculate as to how Adam Smith would have fitted the backward-sloping supply-curve into the analysis of wages in **The Wealth of nations**. It seems (...) that it would have been difficult unless treated as a temporary phenomenon arising from public provision of education. (...) Adam Smith must be regarded as establishing for good or ill, the belief in the normal-shaped supply-curve of works assumed by nineteenth-century economists" (M.Bowley (24),p.198)

Smith's synthesis was, from this viewpoint, a point of departure for other Classical theories of the labour market. These were highly abstract schemes which, on the admission of their proponents, had no normative or political value. In England, for instance, the percentage of dependent workers compared with that of the self-employed was still low. Consequently:

"(...) it seemed likely that the attention given by economists to the question of market wages was out of proportion to their actual importance as a proportion of national income. But another factor probably counts heavily in explaining the primacy of the wage problem in Classical economics: the implicit need, in an era of emerging class structure, to explain to the labouring class why it got what it did" P.McNulty. ((177), p.75)

The predominant ideas in the Classical age thus became those presented by Malthus and Ricardo, which focused on the macroeconomic aspects of labour supply. Their central idea was that of the **natural wage**:

"(...) that price which is necessary to enable the labourers, one with another, to subsist and to perpetuate their race, without either increase or diminution (...) When the market price of labour is below its natural price the condition of labourers is most wretched: then poverty deprives them of those comforts which custom renders absolute necessaries. It is only after their privations have reduced their number or the demand for labour has increased, that the market price of labour will rise to its natural price, and that the labourers will have the moderate conforts which the natural rate of wages will afford" ((208), p.53)

But in Ricardo we find another brilliant insight which unfortunately was not further developed. Work and consumption were, he noted, linked by a mutual relationship. Rational workers chose different combinations of consumption goods and,at the same time, they planned their family size with similar criteria. This contrasts , for instance, with earlier Malthusian views which were more pessimistic and mechanical. In Ricardo there is also a sort of anticipation of the economic theory of fertility:

"The friends of humanity cannot but wish that in all countries the labouring classes should have a taste for comforts and enjoyments, and that they should be stimulated by all legal means in their exertion to procure them. There cannot be a better security against superabundant population. In those countries where the labouring classes have the fewest wants and are contented with the cheapest food, the people are exposed to vicissitudes and miseries.They have no place or refuge from calamity they cannot seek safety in a lower station, they are already so low that they can fall no lower. On any deficiency if the chief article of their subsistence there are few substitutes of which they can avail themselves and dearth to them is attended with almost all the evils of famine." ((208), p.57)

The same concept can be found also in a passage of his Works:

"It is not to be understood that the natural price of labour, estimated even in food and necessaries, is absolutely fixed and constant. It varies at different times in the same country, and very materially differs in different countries. It essentially depends on the habits and customs of the people (...) Many conveniencies now enjoyed in an English cottage, would have been thought luxuries at an earlier period of our history" ((199),p.94)

In the short-run however workers were inevitably and completely subjugated by the market rules.

> "Labour is a commodity which cannot be increased and diminished at pleasure" ((208), p.105)

Consequently Ricardo's labour economics was characterized as very pessimistic. Given the primacy of long-run economic laws, the only hope for labourers was in economic growth. But Ricardo also believed that the scarcity of natural resources obstructed the pattern of growth. From these considerations there appeared a gloomy future for the working class.(S.Hollander, (123))

More often than not Malthus has been judged to be excessively pessimistic. It is of interest to note that Malthus, besides his populationist theories, also stressed the role of habits in determining labourers' standard of living. In the **Essay on the Principle of Population** (1806 edition) he wrote:

> "The condition of the labouring poor, supposing their habits to remain the same cannot be very essentially improved but by giving them a greater command over the means of subsistence. But any advantage of this kind must from its nature be temporary, and is therefore really of less value to them than any permanent change in their habits. But manufactures, by inspiring a taste for comforts, tend to promote a favourable change in these habits, and in this way perhaps counterbalance all their disadvantage" ((166),p.206)

There is however a further remark to be made about Malthus' interpretation of the Classical system. L.Robbins further (204) emphasized that when Malthus suggested moral restraints to control population, he implicitly intended besides **physiological** determinants also the **psychological** components of the supply price of labour. Somehow, therefore, there is a means to escape the perpetual subsistence conditions.

It would be twisting the evidence, however, to say that the Classical School was not heavily anchored to a "naturalistic or biological" vision of population growth. In the eyes of the Classical economists, the variation in the labour supply had definitely to be related to the number of workers. Furthermore every change was seen to be chiefly the consequence of natural demographic movements which actually did apply in the long-run. Their theory therefore was essentially a theory of labour force (or the participation rate)

In this sense the Classical economists introduced the concept of **class** as a means of studying the mechanism of income distribution. Labour, as a productive factor, had to be measured in the aggregate irrespective of education, sex, age or skill. Classical political economy recognized the value of services rendered by the household; however - as M.Perelman remarks,((250), p.23) -that literature also excluded the household from all theoretical discussions. This "myopia" in seeing more subtle aspects of the labour market is certainly rather surprising because , even at the beginning of the Industrial Revolution, there was a tendency to model individual or household labour supply according to economic determinants. O.Saito(224),(225), has shown that in those dark years, wage increases were causing noticeable fluctuations of the working burdens among sex and age groups of labourers. In particular, women and children were playing the role

of secondary segments in the market, and there is evidence of the existence of what modern labour economics calls added worker effect (that is to say, the entrance of marginal workers into the labour market to counteract decreases in household's income).

The theme of working hours during the Industrial Revolution is, as mentioned before, a controversial issue. The traditional view is that of a worsening of labourers' conditions caused by the introduction of new technologies in manufacturing. But there is a current of historical thought which has examined this hypothesis once again. The English working class , for instance, seems, in the light of these new studies, not so weak and ready to change old habits as was assumed. Absenteeism and other kinds of resistence were real and important phenomena even in those times. Furthermore without doubt intensity and length of work in agriculture, , were no shorter in those days and in the former centuries than those which were in force in the industrial sector. There is therefore no evident proof of the theory of the worsening of workers' conditions in early industrial society (E.Hopkins,(127)). From the second half of the nineteenth century the existence of a negative correlation between wages and hours of work seems proven (M.A:Bienefeld, (18)). Of course such a relationship is partly vague and confused, but the phenomenon surely played a very important role in the successful recruitement of workers into unions and left-wing political movements. Thus from the claim of a twelve hours day the organized working classes passed to the target of ten hours and after that of the eight hours working day.

However each cut of the working day was "adamantly" and consistently opposed by their employers.(Solow-Temin, (243)) Why ? The question is an old one and still topical. Employers knew that shorter working days could not be really linked to lower total wages. Workers assumed their standard of living could not worsen and justified their claims on the basis of increases in productivity. But the evaluation of changes in hourly productivity is theoretically insoluble and the answer can be only empirical. In fact there are no a priori reasons to suppose that the elasticity of output with respect to working hours is greater or less than one. E.D.Denison's study (55) estimated that in 1929 a reduction of an hour of the work-week was fully compensated for by gains in productivity. In 1957 a 1 per cent reduction of working time produced a loss of 0.6 per cent in production. Even though a large majority of modern labour economists incline toward the hypothesis of less than proportional changes of production with respect to hours, there are authors who believe that they have proved that such elasticity is greater than one. Moreover another difficult problem related to the substitution of hours for men exists. The possibility of adopting shifts implied difficult labour organization of jobs and duties. Furthermore the new hourly standards were not adopted by all producers. Therefore there were disadvantages for those who were the first to cut hours (at least in the short run). Each individual entrepreneur thus strongly disliked such innovations. (I.Levenson, (155), p.197) It is certain, that seen from the XIX century workers' viewpoint the choice of an optimal distribution of leisure and income was really meaningful and appreciated.

J.Fourastie' clearly resumed the argument as follows.

> "Subsistence is an inescapable problem for everyone as long as the essential needs of foods and clothing are not satisfied. But as soon as these elementary problems of the level of living are resolved, men begin to attach more importance to the style of life. And very soon they are ready to sacrifice some part, even an important part,

of their **level of living**, to improve their **style of life**. It is thus that since 1900, by voluntarily reducing the duration of work we have unwittingly reduced our possible level of living by about a half"((82),)

1.4. Marx-Engels' theories: the 'reserve army' and the growing misery of the working class

The radical criticism of the Classical theories by Marx and Engels attempted to formulate a new theory of labour-value. Obviously this involved an extensive study of worker's conditions. Consequently in the works of these authors apart from sharp sociological analyses, one can also find many brilliant insights about forthcoming social phenomena. All their analyses, however, were subjugated (at least as regards the theme we are concerced with) to the basic assumption of an "iron law" of perpetual subsistence status for the labourers. This rigid premise was essential to the conclusion that capitalist society could not possibly resolve the dramatic contradiction between growing misery and wealth accumulation. Marx and Engels, for this reason, advocated a global revolutionary change in the economic system

Their earlier works, as is well known, were concerned with historical and sociological enquiries into working class conditions which gives us impressive and precise descriptions. But in these books a clear vision of the deep changes in the style of living of the masses is also present. In Engels' work **The Conditions of the Working Class** (65) the feelings associated with work for the new industrial labourers was thus described:

> "The more a man, the worker, feels himself, the more hateful must be to him, because he feels the constraint, the aimlessness of it for himself. Why does he work? For love of work? For a natural impulse? Not at all! He works for money, for a thing which has nothing to do with the work itself" ((65),p.118)

Translated in utilitarian terms this means that the new industrial worker was forced by the technological revolution to accept a new balance between total disutility of his work and the utility deriving from subsistence consumption. As has been mentioned before, pre-industrial societies slowly evolved and at the same time maintained their equilibrium by means of a mixture of leisure and work which was codified by meta-economic laws.

On the contrary, the urban worker was losing such a sense of confidence in an established social order, where customs and strong community feelings were widely shared. In the new industrial capitalist society, he was formally free to sell his labour-power without the constraints of the feudal order, but he was always (for subsistence status) forced to accept capitalist rules and conditions. Therefore the worker could in no way choose his own style of living and:

> "The failing of the workers in general may be traced to an unbridled thirst for pleasure, to want of providence, and of flexibility in fitting into social order, to the general mobility to sacrifice the pleasure of the moment to a remote advantage" ((65),p.129)

Marx recalled these pages in his **Capital**. The Seventh chapter is entirely devoted to the study of the working day's evolution. The "real" working day was the cause for which the antagonist social forces were fighting. The class struggle was, as in the Classical view, a shifting balance between the opposite sides of demand and supply of labour. But the focus of Marx and Engels' interest was not the employment level. For these authors the greatest problem for the worker was not only the fear of unemployment, but above all the specific conditions of the employee. The reserve army of the unemployed

was a constant datum of the capitalist economy;if at the peak of a boom unemployment temporarily disappeared, such disappearance would have been very shortlived. The struggle concerned instead the reappropriation of the surplus-labour and the surplus-value: in other words, the length of the working day. The capitalists (as class) tried to curb this resistance by introducing new machines which inevitably created the right reserve army of unemployed.

Marx and Engels' theory is in this sense much sharper than the Classical one. As a matter of fact it refers to all the features of labour supply: **participation rate, working length, intensity of labour.**

Marx, in **Capital**, does not believe that the workers have any chance to actively control their own labour supply. Sometimes, however, (as in the parts regarding unionism and strike power) he seems to think that it is possible for the working class to achieve a real improvement in their standard of living within capitalist society. The proposed solutions are always however the total subversion of the present social system: to replace capitalism with socialism. It is therefore difficult to summarize Marx's complex ideas about labour supply dynamics. One can start from the simple scheme of the first volume of **Capital**. The representative worker must exchange his only economic resource: **labour-power**, and he resumes his own status by saying to the capitalist:

> "You and I know, on the market, only one law: that of exchange of commodities. And the consumption of the commodity belong not to the seller who parts with it, but to the buyer, who acquires it. To you therefore belongs the use of my daily labour-power. But by-means of the price that you pay for each day, I must be able to reproduce it daily, and to sell it again. Apart from natural exhaustion through age & c., I must be able on the morrow to work with the same normal amount of force, health and freshness as today. You preach to me constantly the gospel of "saving" and "abstinence". Good! I will, like a sensible saving owner, husband my sole wealth, labour-power and abstain from all foolish waste of it. I will each day spend, set in motion, put into action only as much of it as is compatible with its normal duration, and healthy development. By an unlimited execution of the working day, you may in one day use up a quantity of labour-power greater than I can restore in three. What you gain in labour I loose in substance" ((173),pp.224-225)

But "what is the working day?"- Marx asks.

> "(...) the working day contains the full 24 hours, with the deduction of few hours of repose without which labour-power absolutly refuses its services again. Hence it is self evident that the labourer is nothing else, his whole life through, than labour-power, that therefore all his disposable time is by nature and law labour-time, to be devoted to the self-expansion of capital. Time for education, for intellectual development, for the fulfilling of social functions and social intercourse, for the free-play of his bodily and mental activity, even the rest time of Sundays (...) moonshine! But in its blind unrestrainable passion its were wolf hunger for surplus-labour, capital oversteps not only the moral, but even the merely physical maximum bounds of the working-day"((173),p.252).

There is however a contradiction in this kind of reasoning. Marx quotes for instance an "empirical" test of the existence of a backward bending curve of the supply of labour. This implicitly means that the workers, at least sometimes, do not live in subsistence conditions:

> "Factory Inspector Leonard Horner conducted in his own person and through his sub-inspectors, many examinations of witnesses in the factories of Lancashire (...) about 70% of the workpeople examined declared in favour of 10 hours, a much smaller percentage in favour of 11 hours, and an altogether insignificant minority for the old 12 hours (...) The majority of the "over-times" declared : "they would much prefer working ten hours for less wages, but that they had no choice that so many were out of employment (...) that if they refused to work the longer time, others would immediately got their places, so that it was a question with them of agreeing to work the longer time, or of being thrown out of employment altogether" ((173),p.270)

The author however does not enlarge upon these notes. The vehement criticism of the capitalist system continues with caustic historical remarks about all the trickery and the mismanagements which the dominant class has been applying to neutralize the liberal legislation on working time.

> "The history of the working day in certain branches of production, and the struggle still going on in others in regard to this regulation, prove conclusively that the isolated labourer, the labourer as "free" vendor of his labour force, when capitalist production has once attained a certain stage, succumbs without any power of resistance. the creation of a normal working day is therefore, the product of a protracted war, more or less dissembled, between the capitalist class and the working class" ((173),p.283)

In the pages following, however, Marx seemed to believe that the worker movement could achieve sensible improvements of its social conditions through organized collective bargaining.

> "For "protection" against "the serpent of their agonies", the labourer must put their heads together, and, as a class, compel the passing of a law, an all-powerfull social barrier that shall prevent the very workers from selling, by voluntary contract with capital, themselves and their families into slavery and death"((173),p.285)

In Chapter XIII, which treats of "machinery and modern industry" Marx, once again, came back to a largely pessimistic view of the relationship that links men and industrial capitalist organization. The machine is the strongest capitalist means of adjusting labour supply (that is to say, participation rate) to demand and of avoiding any basic constraint to productive capacity. Once again the assumption of a perpetual subsistence status is fundamental to this hypothesis. This is the result of the Law of Increasing Misery of the Proletariat. The causal relationship must therefore roughly follow these lines: (a) the introduction of machinery increases the surplus-labour of each worker who uses it. (b) The labour force value is determined by the sum of commodities and services that his family needs. (c)

The machinery always increases the division and the standardization of jobs. In other words machines create their own labour supply by involving an increasingly greater number of population in the labour market.

> "The instrument of labour, when it takes the form of a machine immediately becomes a competitor of the workmen himself (...) division of labour specializes this labour-power, by reducing it to skill in handling a particular tool. As soon as the handling of this work becomes unsaleable, like paper money thrown out of currency by legal enactment, that portion of the working class, thus rendered superfluous by the machinery, i.e. no longer immediately necessary for self-expansion of capital, either goes to the wall in the unequal contest of the old handcrafts and manufacturers with machinery, or else floods all the more easily accessible branches of industry swamps the labour market and sinks the price of labour-power below its value" ((173),p.406)

and furthermore:

> "In so far as machinery dispenses with muscular power, it becomes a means of employing labourers of slight muscular strength, and those whose bodily development is incomplete, but whose limbs are all the more supple. The labour of women and children was, therefore, the first thing sought for by capitalists who used machinery. That mighty substitute for labour and labourers was forthwith changed into a means for increasing the number of wage-labourers by enrolling, under the direct sway of capital, every member of the workman's family, without distinction of age or sex"((173),p.372)

There are other interesting sociological observations in Marx's thought about the family's reproductive function for the labour force. From his point of view the household has the aim substantially of maintaining and reproducing the working class necessary for the reproduction of capital. Thus capitalists can safely leave the achievement of this aim to the instinct of self-preservation and propagation. (Himmelweit-Mohun (117)) Even domestic labour, which was reserved to women, could be considered an aspect of capitalist division of labour. Marx caught and re-interpreted the process of substitution between rewarded labour and domestic production of his age and it is curious to note that he expressed his view in the current terms of modern household production theory. A certain number of familiar functions cannot evidently be substituted. Therefore, when women work at sewing, mending, children's care, etc. these services must be bought on the market. A decrease in domestic production corresponds to an increase in services bought through the market, namely an increase of money expenditure. Market rule pervaded all working and non-working time of the working-man's family.

Coming back to the specific theme of the variation of the reserve army by means of machinery, one can conclude that Marx did not take into account future possibilities that labourers would have to control their labour supply flow better. This is a crucial point in creating a dynamic model of the capitalist society. If Marx had admitted to an evolutionary change in the strength of the supply side of the market (or in today's terms the presence of an income effect on worker's consumption) then maybe some of his final judgements and forecasts about the destiny of capitalism would have been revised.

Marx's deductions rested chiefly on three basic assumptions.

(1) Global surplus-value is absorbed more and more by the consumption of luxuries by the higher classes both on domestic and international markets. The consumption of the working class is maintained merely at the subsistence level because of the "natural wage" mechanism. The capitalist economy thus cannot avoid periodic crises of overproduction until the final resolution of this contradiction and the breakdown of the social system.

(2) Workmen have no means of rationing their labour supply by decreasing fertility or by bargaining for shorter hours and a lower intensity of work. As has already been noted, however, Ricardo and even Malthus had implicitly suggested that the labourers could also be rational economic agents capable of adapting their style of living to different social standards. Marx evidently did not pay great attention to this point or he did not emphasize it enough.

(3) Marx pointed out the technological origin of unemployment. By criticizing J.Mill, McCullogh, Torrens and Senior's theories of a perfect substitution of capital with labour in the medium-long run, he explained the existence of an unavoidable deep antagonism between men and machines. But if unemployed people could not easily re-enter the economic circuit because of the strict technical division of labour, then the bargaining power of the employed worker would necessarily grow if the process of enlargement of constant capital relative to variable capital continued at the same velocity. It is fair however to note that, besides the fallaciousness of this generalization, Marx's theory is certainly superior to the a-historical hypothesis of the Classical economists of a "natural law" of overpopulation and subsistence conditions. Marx argued that "this law is peculiar to the capitalist mode of production and that every specific historic mode of production has its own special laws of population historically valid within its limits alone" (173),p.632).

But even this Marxian argument does not satisfy some of his critics. If wage rates are explained as an historical datum, they are not properly speaking a market phenomenon. But if they are, the liberal economists argue, then the economic meaning of the theory is also deeply impoverished.

L.Von Mises observed:

> "Without a catallactic theory of wage no economic analysis of the market can be complete and logically satisfactory. The characteristic mark of economics is that it explains the exchange ratios manifested in market transactions as market phenomena, the determination of which is subject to a regularity in the concatenation and sequence of events. It is precisely this that distinguishes economic conception from the historical understanding, theory from history" (L.Von Mises (265), p.606)

As regards the unemployment problem Marx did not believe that it could be solved through the enlargement of the public sector, which he judged naturally "small". Neither could the solution come from enlargement of "domestic slavery".

M.Morishima (186) makes the afore-mentioned points clear. From this point of view Marx was a wage-subsistence theorist. Therefore he gave no consideration to an idea which is crucial in modern theories of growth, that is to say, that the population (and the labour supply) is a function of wages. Thus:

> "(...) we may say that Marx assumed though not explicitly, a high rate of growth of the labour force, (that is, high in realization

to the growth of the demand for labour) even at the subsistence wage-rate, for biological, sociological, technical and other reasons, (...) Therefore the economy can grow at the minimum real wage rate, producing a relative surplus population which is ever growing" ((186),p.131)

History has irrefutably shown that the "Law of Growing Misery" is wrong. In Western countries workers have, for a long time, been free to bargain over working time, quality of jobs and working conditions. Moreover in our own day unemployment is of a different kind to that ponted out by Marx. The most evident phenomenon is unemployment of youth or poor races (blacks, Hispanic, etc.) which does not at all create a climate of merciless competition among workers as a whole. The other phenomenon is the segmentation of male and female work.

From this point of view, therefore Marx's apocalyptic conclusion about a final breakdown of capitalism loses some logical connections. N.Georgescu-Roegen gave a rigorous treatment and confutation of these conceptions of perpetual subsistence conditions of the working class:

"It is hard to see how one can reconcile Marxist economics with the assertion that capitalism produces more consumers' goods than the demand for them. For if there is no technical relation between employment and output, there also is no demand equation in the system. The employed workers have no demand; they always receive and consume exactly what results from capitalists' behaviour" ((96),p.237)

One must however say that Marx also had many insights into the hidden potentialities of merciless capitalist growth. There is a famous passage of the III Volume of Capital where the author captured very precisely the importance of consumption and leisure in human life:

"It is one of the civilising aspects of capital that it enforces this surplus-labour in a manner and under conditions which are more advantageous to development of the productive forces, social relations, and the creation of elements for a new and higher slavery, serfdom, etc. Thus it gives rise to a stage, on the one hand, in which coercion and monopolisation of social development (including its material and intellectual advantages) by one portion of society at the expense of the other are eliminated. On the other hand, it creates the material means and embryonic conditions, making it possible in a higher form of society to combine this surplus-labour with a greater reduction of time devoted to labour in general" ((173), p.814)

As a matter of fact, in Marx' view:

"(...) the realm of freedom actually begins only where labour, which is determined by necessity and mundane considerations, ceases. Thus in the very nature of things it lies beyond the sphere of actual material production (...) With his development this realm of physical necessities expands as a result of his wants but, at the same time, the forces of production which satisfy these wants also increase. Freedom in this field can only consist in socialised man, the associated producers, rationally regulating their interchange

> with Nature (...) But it nonetheless still remains a realm of necessity . Beyond it begins that development of human energy which,however, can blossom forth only with this realm of necessity as its basis. The shortening of the working day is its basic prerequisite" ((173),p.816)

P.A.Samuelson (226) classified Marx as a minor post-Ricardian economist, an opinion which is debatable. But it is certainly true that Marx's works are full of historical and sociological annotations of great interest, which the author himself did not further elaborate. In fact if these insights had been further developed his conclusions would probably have been changed. The anxiety to arrive at the general theory of capitalist economy, however, induced the German thinker to oversimplify the labour market description and its dynamics with unfortunate consequences.

1.5: W.S.Jevons: the marginalist and utilitarian approach to the labour market

W.S.Jevons is unanimously considered to be the economist who offered the first microeconomic treatment of labour supply. This fact is perfectly coherent with the general theoretical approach of the English economist. As a matter of fact from the utilitarian viewpoint, the first and most important question asked was: why does a man wish to work? and furthermore how long and how strenuously does he wish to work? Such questions would not have had any meaning in slave society nor in a pure Malthusian or Marxian world. Jevons, however, lived in a social environment where workers were beginning to command a growing share of their own disposable time and where they were not forced by subsistence conditions to sell all their potential labour-power. The worker Jevons was interested in was therefore a stereo-type of a rational economic agent with his own freedom to choose.

Perhaps it is not a coincidence that in his **Theory of Political economy** Jevons supports his assumptions by taking examples referring to every day life. This reveals the non-classist vision of the labour market. The workers whose behaviour Jevons described are artisans, merchants, clerks, barristers, physicians etc. as well as workers in manufacturing industry. All these workers have utilitarian motives in common which are satisfied through a maximising process which end with some balance of pleasure (leisure) and pain (labour). In one sense therefore Jevons astutely predicted the growth of middle classes and the spreading of their tastes and standard of living.

At that time, several statistical contributions (among which were the famous works by E.Engel on the evolution of household expenditure patterns (from 1857 on)) had already shown that consumption was strongly influenced by prices and income both at the micro and macro levels, but above all that consumption was more and more departing from subsistence levels.(G.Stigler (247))

In 1871, when Jevons wrote his **Theory of Political Economy**, the conditions of manual workers in England had also changed radically from the dark years of the Industrial Revolution, (so that even the revolutionary F.Engels who survived Marx,was beginning to admit the possibility of a peaceful evolutionary process toward socialism or at least better living conditions for the unionized working class). But this does not mean that the problem of the pain of hard long work had disappeared. On the contrary the basis of marginalist reasoning was precisely the disagreeability of work. and Jevons, from this point of view was influenced by the utilitarian theorist R.Jennings (132) .Jevons defined labour as every "painful exertion of mind or body undergone partly or wholly with a view to future good"((133),p.168).

But he had already noted the ambiguity of such a definition. The existence of pleasure and compulsion in economic activity was undeniable,

> "(...) labour may be (...) agreeable (...) but only in a limited amount and most men are compelled by their wants to exert themselves longer and more severely than they would otherwise do" ((133),p.169)

Yet Jevons' theory had to abstract from those complexities to arrive at a clearly cut utilitarian balance between pain and pleasure. But even though Jevons also recognized the manifold nature of labour, he thought it was in principle possible to reduce working time to some homogeneous and measurable psychological quantity: **disutility**.

"Every act whether of production or of consumption may be regarded as producing what Bentham calls a lot both of pleasures and pains and the distinction between the two process will consist in the fact that the algebraic value of the lot in the case of consumption yields a balance of positive utility, while that of production yields a negative or painful balance, at least in that part of the labour involving most effort" ((133),p.169)

Having noted the double dimension of labour's disutility: duration and intensity, Jevons compared it with the utility that derived from the enjoyment of every other economic good. He therefore drew figure 1 where

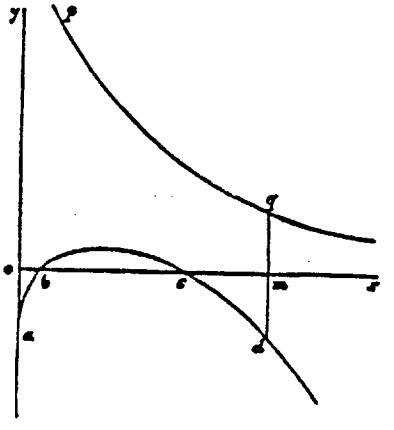


FIGURE 1

the marginal utility of future goods which could have been commanded by labour income (curve p-q) was compared with the disutility of working activity (curve a-b-c-d). The segment which joins each point of the two curves then represents the marginal utility balance. Until the point m is reached, the balance is constantly positive ; thus the worker has an incentive to prolong his efforts. Beyond that point there is no reason to continue the working effort.

Jevons supposed that work could also produce positive utility (segment b-c). It was evidently a way to cope with the problem of pleasant jobs. But he pointed out that this fact did not change the logic of his reasoning:

"When we exert ourselves for the sole amusement of the moment, there is but one rule needed, namely, to stop when we feel inclined, when the pleasure no longer equals the pain" ((133), p.168)

Then he deduced that:

"A free labourer endures the irksomeness of work because the pleasure he expects to receive or the pain he expects to ward off,

by means of the produce, exceeds the pain of exertion. When labour itself is a worse evil than that which it saves him from there can be no motive for further exertion and he ceases"((133), p.176)

In mathematical terms he wrote the famous equation:

$$\frac{dl}{dt} = \frac{dx}{dt} \cdot \frac{du}{dx}$$

where l is the painfulness degree; x is the product of labour (or income) and u is the utility deriving from the consumption of these commodities.

Jevons also discussed the problem of the backward bending curve of labour supply even though he did not draw such a curve.

"Supposing that circumstances alter the relation of produce to labour, what effect will this have upon the amount of labour which will be exerted? There are two effects to be considered. When labour produces more commodity, there is more reward, and therefore more inducement to labour If a workman can earn ninepence an hour instead of sixpence, may he not be induced to extend his hours of labour by this increased result? This would doubtless be the case were it not that the very fact of getting half as much more than he did before, lowers the utility to him of any further addition.

By the produce of the same number of hours he can satisfy his desires more completely; and if the irksomeness of labour has reached at all a high point he may gain more pleasure by relaxing that labour than by consuming more products. The question thus depends upon the direction in which the balance between the utility of further commodity and the painfulness of prolonged labour turns" ((133), p.180)

The contents of the neoclassical theory of labour supply are thus fully expressed as well their puzzling conclusions:

"In our ignorance of the exact form of the functions either of utility or of labour, it will be impossible to decide this question in an **a priori** manner" ((133), p.180)

One should note that Jevons underlined at this point the importance of an empirical approach to the matter, by quoting Peter's **Progress of the Nation** and other historical and sociological observations. From these quotations it follows that Jevons inclined toward the hypothesis of a negative relationship between hours of work and hourly real wages.

"We may conclude (...) that English labourers enjoying little more than the necessaries of life, will work harder the less they produce; or, which comes to the same thing, will work less hard as the produce increases.

Evidence to the like effect is found in the general tendency to reduce the hours of labour at the present day, owing to the improved real wages now enjoyed by those employed in mills and factories" ((133), pp. 180-181)

On the basis of this discovered relationship Jevons however indulged also in some unfortunate "natural philosophy" observations:

> "It is evident that questions of this kind depend greatly upon the character of the race"((133), p.182).

So in explaining such behavioural differences he wrote:

> "Persons of an energetic disposition feel labour less painfully than their fellow-men, and if they happen to be endowed with various and acute sensibilities their desire of further acquisition never ceases. A man of lower race, a negro for instance, enjoys possession less, and loathes labour more; his exertions, therefore, soon stop. A poor savage would be content to gather the almost gratuitous fruits of nature, if they were sufficient to give sustenance (...) The rich man in modern society is supplied apparently with all he can desire, and yet he often labours unceasingly for more" ((133),pp.182-183).

There is in this quotation an interesting anticipation of a modern phenomenon: that is to say the continuosuly increasing labour supply related to highly skilled jobs or in present terms the problem of the harried leisure class (S.B-Linder (157), J.Zuzaneck,(287)).

> "In some characters and in some occupations, in short, success of labour only excites to new exertions, the work itself being of an interesting and stimulating nature" (((133),p.182)

But besides these paradoxes Jevons recognized the importance of economic incentives for the individual labour supply. He recalled the famous passage of **Querist**:

> "Bishop Berkeley, in his **Querist**, has very well asked: "Whether the creating of wants be not the likeliest way to produce industry in a people? And whether if our (Irish) peasants were accustomed to eat beef and wear shoes, they would not be more industrious?" ((133), p.183)

We note in this passage a very brilliant anticipation of a modern phenomenon: advertising, which continuously creates new needs and therefore increases the willingness of the labour-force to offer more working time or at least decreases their propensity to enjoy more leisure. Two contemporaneous authors: Brack-Cowling (25), among others have treated such a question and shown precisely the existence of this effect under historical perspective. The length of the working week in U.S manufacturing has been arrested since World War II. They explain this precisely through the effects of massive advertising which created new tastes and sustained the demand for substitution of durable goods .

One can conclude on this basis that Jevons' re-interpretation of the backward bending curve was in some sense "progressive". He saw the worker free at last from perpetual subsistence status, as being, like a capitalist entrepreneur, who could express express his market preferences and at least partly plan his own life.

The limits of Jevons' approach must surely be found in his "cardinal"

logic. The author addressed his study the problem of directly measuring utility's components. Yet his methodology was not completely sterile and it was alluded to in the famous and posterior article by L.Robbins which refuted Knight and Pigou's hypothesis about an overwhelming income effect on individual consumption of leisure and re-opened the debate on macroeconomic implications of the labour supply function.

1.6: Other References and Contributions of XIX century economists

The Industrial Revolution and the growth of the capitalist economy were the sources of many social problems of the European countries during the XIX century. The integration of the working class into the existent institutions began to be considered also by liberal intellectuals. The laissez-faire doctrine applied in particular to the labour market could not cope with the growing demand for income redistribution and political reforms coming from the new working class.

Between the extreme positions of liberal conservatism and utopian or marxist revolutionary thinking the centre position of thinkers like J.S.Mill must also be mentioned. Leaving aside the question of the relevance of his doctrine on modern reformism, it is important to underline how his "liberal-socialism" represents at the same time the apex of the classical thought and the limit of such a school in facing the issues deriving from the economic dynamics of the early XIX century.(R.Fletcher, (75)) But Mill in giving us the final synthesis of the intellectual contributions of the Ricardian and post-ricardian approach, at the same time, in one sense, opened the way to the new utilitarian approach.

> "Mill remains a symbol of ecleticism and compromise. More than every other English economist he represents that age when the early capitalism, still highly competitive and linked to England's supremacy in the world trade reached its top." (E.Roll, (220), p.357)

Mill's political and economic reasoning represents an attempt to maintain a strong faith in capitalism's superiority, and to avoid at the same time, the over-simplified solutions of a purely repressive answer to the Socialist threat to economic and political order. Laissez-faire could no longer be a general rule in every circumstance. The intervention of the law into many economic questions was necessary and could not be further postponed. This did not mean overruling the judgement of individuals regarding their own interest, but on the contrary it meant giving effect to their judgement. It is not by accident that Mill chose the issue of the reduction of working time to substantiate his argument.

A reduction of hours of labour is generally seen as a gain for working-people. But something closely related to habits, labour relations and labour organisation could ensure that such a limitation would not be spontaneously adopted. Workmen who refuse to work, for instance, more than nine-hours a day , while there are others who work, for instance, ten hours, have practically no bargaining power. Even though a large number of men desire to cut their individual labour supply, while maintaining the same wage, some workers could not observe this collective agreement. Anyone who violates the collective agreement by working more hours could gain by deviating from it and yet at the same time being protected by it.

Mill thus thought that in an ideal situation all working-people could benefit because those who preferred to work harder and earn more would have an opportunity of doing so, while the remaining ones could work less. But probably - as Mill pointed out - this would be an unstable situation. When so many prefer to work more hours on the improved terms, the limitations could not be maintained as a general practice: what some do from choice, others would soon be obliged to do from necessity and in turn those who have chosen long hours for higher wages, would be forced in

the end to work long hours for no greater wages than before. This was one reason why legal regulations are necessary to give effect to individual and collective opinions of suppliers in the labour market. We note that Mill's thought as far as working hours were concerned is very similar to that of other thinkers of different schools like Jevons, Marshall and Hobson and other radical economists.

The vexed question of working hours in the following decades became one of the chief themes of progressist movements and drew attention to many problems of the labour market which are still present today. Profound changes in industrial relations obviously induced further reflections in economic theory and political economy.

The working class which had progressively augmented their political strength were now capable of favourably bargaining wage and working conditions. At the same time, however, wider differences among industrial subsectors were emerging. Economics became more specialized and divided into specific branches. Labour economics in particular had been identified with the classic work-fund theory up till then, and it is worthwhile to underline that such a theory had been very often re-interpreted to claim higher hourly wages and shorter working time. This claim was often also considered a solution to reach a higher level of employment level. Yet the work-fund hypothesis became discredited precisely because of its normative suggestions . As a matter of fact the first experiments of introducing eight-hour regimes immediately undermined the capability of the theory to explain and forecast the real evolution of the labour market.

The work-fund theory substantially postulated the existence of a fixed quantity of available employment in the short-run and a perfect substitution between men and hours. Given a certain demand for labour it was therefore unimportant along which of the two dimensions of labour supply (namely hours and men) it was distributed. Unions just advocated these conclusions when claiming the eight hours regime.

Unfortunately after having been tested this mechanical deduction did not fulfil its promises. The capitalist economy appeared to be much more flexible than was predicted by wage-fund theorists and its reactions to business cycles and relative price changes revealed a highly unpredictable nature. Productive re-organization exploited the unsuspected adaptiveness of the labour-capital ratio to technical progress, so that machines rapidly substituted men. Further more workers' reactions were also widely and surprisingly differentiated. For instance, in that period, in England, the leading country in industrial relations, not even trade-unionists could agree on demanding a limitation of hours. First of all many of them were afraid of losing their independence by seeking favourable legislation on working regimes. Secondly, among some sectors of employed workers there was a propensity to income gains (that is to say consumption) higher than the propensity to leisure. Class solidarity and the relief of unemployment was not a determinant factor in labour market bargaining.(J.Harris, (105))

Economists, intellectuals and politicians nearer to the workers' movement, in all events, succeeded in proposing and obtaining some advanced experimentation of shorter working time. But, as some influential works by S.Webb bitterly acknowledged, the explanations and suggestions which had been offered by the current economic literature unfortunately did not correspond to the facts.(J.Garraty,(93)).

There were, in fact, unpredicted adjustments in industrial organization, which reverted unfavourably on employment and labour/capital ratio:
i) shorter hours were implicitly traded with labour intensity of labour, that is to say, a higher marginal productivity. Therefore, given a fixed demand

for goods, production targets could have been reached through a number of hours proportionally lower.
ii) shorter hours often implied a larger proportion of overtime.
iii) shorter hours were traded, when the economic cycle allowed for a re-organization of production through new intensive labour-saving investment.

Moreover it was already evident that labour was not at all homogeneous and that the division of labour was not sufficient to create perfect substitution between unemployed and employed workers. Hence the Great Depression of the last quarter of the XIX century brought a new economic and political problem to light: **unemployment**. Economists, social scientists and politicians began ,in this period, to concern themselves with this specific feature of modern labour markets and consequently to study political and administrative remedies. It is worthwhile to underline that the same word **unemployment** did not come into use subsequent to Hobson's definition (119) and A.Marshall's works (171) . Hobson also recognized the ambiguity of such a concept by pointing out that "unemployemnt is perhaps the most illusive term which confronts modern industrial society" (119).

In 1886 the Minority Report of the Royal Commission on the Depression of Trade and Industry, drastically redefined the basic economic problem of the social community as no longer the **struggle for existence**, but as **the struggle for work**. (see J.Harris, (105), p.7). We can complete these observations by adding that, at the same time, also **the struggle for shorter working hours was starting.**

The works of a non-orthodox and anti-academic economist like J.A.Hobson are full of interesting reflections on the labour supply . Because of his revealing approach to economic issues he was in fact more attentive than academic economists to several changes of his time. Being unconcerned with a particular analytical rigour, he often caught new social and economic phenomena in nuce. One of his books: **The Industrial System** (122) is full of vivid descriptions of the mature English economy.Some pages which refer to wages and the labour market reveal how deeply the industrial system had changed during the previous century. In England minimum wages were often still below the maintenance level of a worker's family. Yet the general conditions of the working class were no longer, or at least, not always, those of subsistence levels. In other words labour supply was still, for a great part, oriented by demographic trends As regards participation rate dynamics there was therefore a dominance of the so-called **added labour-power effects**: namely, when real wages fell, households tried to maintain their standard of living by selling on the market a larger share of their potential labour-power. This reaction was not completely automatic: wages and participation rate changed according to the economic development of each region. Women and children could enter the labour market only if there were industries which demanded their services. Hobson's analysis pointed out that in this case there was a depressing effect on primary wage-earners , for instance in regions with metal and textile industries:

> "(...) workers (did) not offer the same amount of resistence to reductions of wages in bad times which they would have offered if the entire support of the family rested upon the metal wage" ((122),p.85)

In other words Hobson underlined the role of the family as the "basic unit of the wage system" and as the decision center with regard to labour supply. This insight anticipated concepts that are nowadays basic to

neoclassical theories of the labour market and many sociological approaches to household consumption behaviour. But Hobson further clarified the new meaning of the minimum wage in modern industry. He pointed out that while it:

> "(...) is not the physical subsistence minimum of the old doctrine, it nonetheless remains true that the conditions of the sale of labour-power are normally such as to keep the price down to the point of marginal cost of production, that is the conventional standard of comfort of the worst labour in each grade ((122),Pag.90).

And he further enunciated a concept that became common-place (even though not always correct):

> "There is not the same liberty to refuse to sell labour-power as there is for employers to refuse to buy (...) He (the worker) must sell and he must sell now. If the labourer does not sell he starves; if the employer does not buy he loses some profits" ((122),p.90)

But Hobson, at the same time, also noted that these explanations were true only in a general sense. The labour market only indirectly created competitive conditions. In other words, the participation rate was only partially influenced by wage bargaining. Customs, personal considerations, public opinion, etc. were enabling the workers to partly neutralize competition and to put a constraint on their supply of labour especially in particular segments of employment. It was thus possible for workers to create a "scarcity" of labour-power and to raise the "standard wage". This was obviously the basic strategy of the trade-unions.

Furthermore, Hobson was greatly impressed by the diffusion of automation. In **The Evolution of Modern Capitalism** he paid great attention to the impact of automation on manual jobs. New technology certainly permitted a shortening of working time, but it inevitably increased labour intensity:

> "Perhaps it would be right to say that machinery develops two antagonistic tendencies as regards the length of the working day. Its most direct economic influence favours an extension of the working hours, for machinery untired, wasting power by idleness, favours continuous work. But when the growing pace and complexity of highly-organized machinery taxes human energy with increasing severity, and compresses an increased human effort within a given time, a certain net advantage in limiting the working day for an individual begins to emerge, and it becomes increasingly advantageous to work the machinery for shorter hours, or, where possible, to apply "shifts" of workers.
> But in the present stage of machine-development (...) the general tendency is still in the direction of an extended working day" ((119),p.250)

Hobson also underlined the consequences of shorter working days on consumption:

> "The value of a shorter working day consists not merely in the diminution of the burden of toil it brings, but also in the fact

> that increased consumption time enables the workers to get a fuller use of his purchased consumables, and to enjoy various kinds of "free wealth" from which he was precluded under a longer working day" ((119), p.251).

and furthermore:

> "The close relation between higher wages and shorter hours is generally acknowledged. A rise of money wages which affects the standard of living by introducing such changes in consumption as require for their full yield of benefit or satisfaction an increase of consuming-time can only be made effective by a diminution in the producing time or hours of labour" ((119), p.278)

It is interesting to note that, at the turn of the century, leisure or consumption time was generally considered complementary to consumption. In fact working-weeks of 60-70 hours did away with the incentives to increase unnecessary expenditure at a higher rate. In order to increase expenditure on clothing, transport, education and recreation etc. an extension of the time available for their enjoyment was required.

Economic analysis was still unable to explain the effects of such complementarity within a marginalist approach. Therefore the neoclassical approaches assumed that goods and leisure were substitutes. This allowed them to simplify the treatment of the consumer-worker's problem of allocation. Complementarity between leisure and consumption, was in all events confined to a small share of goods and services for consumption. Only in the period following World War II when such components of aggregate consumption expanded very quickly, has complementarity been rediscovered. In the 1960's complementarity was fully integrated into the new consumption theory proposed by Lancaster (141) , Becker (11) and others.

In the field of academic studies the new Marginalist approach to wage theory called attention to the individual origins of labour supply decision. In this sense there was an implicit return from a macro-economic to a micro-economic framework. Within Classical theory working time and wage changes had predetermined effects on employment: labour, just as other productive inputs was dimensionally treated as a stock. Therefore labour supply was determined irrespective of individual choices. On the contrary in Jevons' thought, it was individual labour supply which had a decisive weight in determining the price of labour. Labour was chiefly seen as a flow of services, that could fluctuate widely in the short-run.

A.Marshall rearranged the marginalist assumptions to arrive at a new general synthesis. Marshall's thought followed an evolution which departed from traditional theoretical views to arrive at the new marginalist approach. His early essays (265) reveal for instance that the English economist in 1870 still espoused a wage-fund approach. In his Essay on Wages, Marshall introduced a distinction between four situations which depended upon the temporal length of the economic analysis.

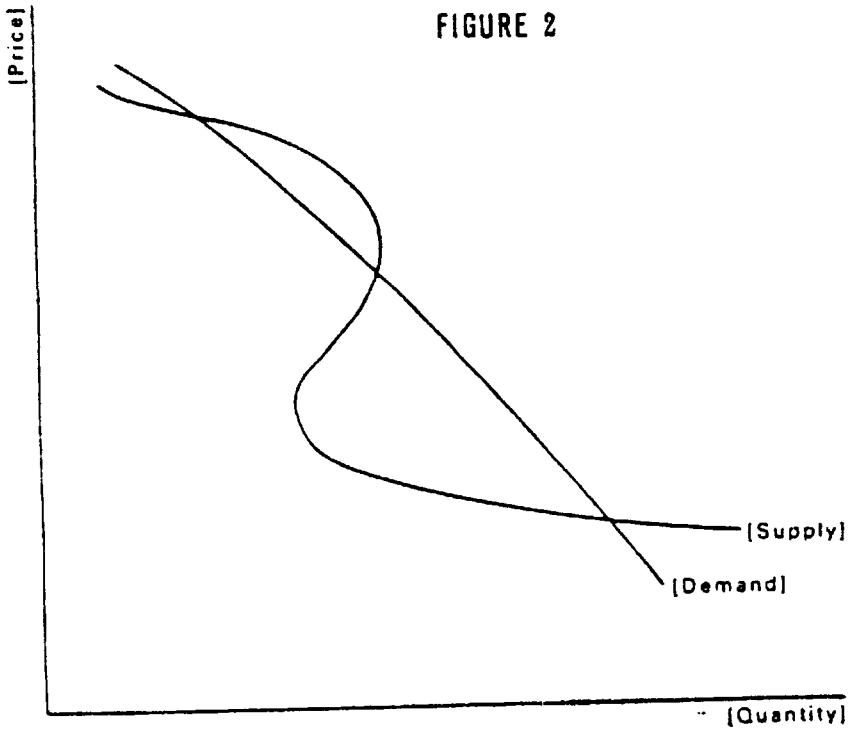
The first situation is that of a very short-run. The exchange of labour for money is remarkably similar to other market exchanges except for one fundamental difference. The individual employer is stronger than each individual worker in bargaining the price. The labourer, when he refuses a job, loses his own time in the search for another purchaser. The employer can live on his own capital. The second situation is that of small markets and great resistance in labour mobility in the short-run. In this case the

bargaining power of the workers increases, for instance by means of union organization. The labourers can limit their offer by shortening their working time or by constraining the entrance of new or marginal workers. In the third case labour supply is practically constant and its curve becomes a straight vertical line. A fall in wages impels a certain number of men to leave the market, but at the same time, many others (to maintain the same level of income) increase their working effort, thereby leaving the aggregate supply of labour substantially unchanged. Attempting to explain wage determination, he split the argument, as is well known, into short and long-run views. This is the typical case that was postulated by the wage-fund theory. In fact by assuming that the demand curve is a rectangular hyperbola, the total amount of income that the work force commands is constant. The fourth case concerns the long-run equilibria of the labour market. Demand for labour increasesat a constant rate indipendent of wages because it depends on technical factors and on wealth accumulation. Labour supply however is positively related to wages essentially through demographic determinants.

Exceptions to these four equilibria have been noted by Marshall, but they have always been confined to unimportant curiosities. Thus in a preparatory fragment for the **Principles**, we read:

> "in what was originally written as a part of a chapter on market bargaining (...) there is a discussion of a case in which labourers increase their supply of labour in consequence of a fall in wages and vice-versa. Using the "domestic" curves we have a figure of this sort. [Figure 2]. It will be seen that this curve violates our fundamental law of supply for normal values"

FIGURE 2



The essential feature of Marshallian thought was the distinction in wage determination between short and long-run views. A classical definition of such an approach can be found in the "Principles":

> "(...)as a general rule, the shorter the period which we are considering, the greater must be the share of our attention which is given to the influence of demand on value; and the longer the period , the more important will be the influence of production on value" -he wrote- ((171), p.348).

But Marshall's work in some sense deprived the Marginalist approach of many of its subtleties. When working time was highly standardized and the participation rate nearly fixed, labour supply could be confined to long-run structural phenomena that could be excluded from the daily concerns of economic policy. Marshall was however aware of the internal dynamics of the labour market:

> "(...)the economic conditions of the country are constantly changing, and the point of adjustment of normal demand and supply in relation to labour is constantly being shifted" ((171), p.577)

Marshall's marginalist general synthesis had strong repercussions on his followers; moreover his attention to the demand side, in some sense, led to a neglect of other important aspects of workers' behaviour .

Marshall even though conscious of the specific characteristics of the labour market, chose the traditional short-cut of a positively sloped curve of labour supply, and dismissed the backward bending curve as an irrelevant case. Marshall underlined above all the role of habit and social conventions in creating the propensity to increase working effort and income.

> "The longer a man works, or even is on duty, the greater is his desire for a respite (...) while every hour's additional work gives him more pay, and brings him nearer to the stage at which his most urgent wants are satisfied; and the higher the pay, the sooner this stage is reached. It depends then on the individual, whether with growing pay new wants arise (...) or he is soon satiated with those enjoyments that can be gained only by work , and then craves more rest, and more opportunities for activities that are themselves pleasurable. No universal rule can be laid down; but experience seems to show that the more ignorant and phlegmatic of races and of individuals, especially if they live in a southern clime, will stay at their work a shorter time, and will exert themselves less while at it , if the rate of pay rises so as to give them their accustomed enjoyment in return for less work than before. But those whose mental horizon is wider, and who have more firmness and elasticity of character, will work the harder and the longer the higher the rate of pay which is open to them: unless indeed they prefer to divert their activities to higher aims than work for material gain ((171),p 526)

These ideas, like those expressed by Jevons, influenced the theory of economic growth and economic policy. Too often they justified economic failures of under-developed countries by postulating the weak attitude toward work of naive populations, without any deep understanding of specific

psychological elements which enter the range of workers-consumers preferences.
P.H.Douglas observed that:

> "In modern days the chief proponent of this theory have been the imperialists, who are the spiritual descendants of the mercantilists and who have applied to inhabitants of the tropics the same theory which their mercantilist forebears promulgated two centuries before concerning the laboring poor of England" ((57),p.271)

But Marshall substantially thought that:

> "(...) We may conclude that increased remuneration causes an immediate increase in the supply of efficient work, as a rule; and that the exceptions to this rule, just noticed, are seldom on a large scale, though they are not devoid of significance" ((171), p.528).

This reasoning had a great (and biasing) influence on all economic literature that followed, The Keynesian approach, in particular, through the mediation of the Pigouvian adaptation assumed such a function to justify the existence of an L-shaped curve of aggregate supply, which does not affect the functioning of the labour market.

It is interesting to note also the mixture of conflicting concerns present in Marshall's thought. Besides the intellectual logic that suggested more rational and efficient uses of labour services, there is in his works also real concern about the effects of industrialism on human beings. So he advanced proposals to introduce multiple shifts to increase the costs of capital investments and at the same time he suggested decreasing working hours to permit a greater investment in human capital (that is to say, more health, education etc.):

> "The influence which the standard hours of work exert on economic activities is partly obscured by the fact that the earnings of a human being are commonly counted gross. No special reckoning being for his wear and tear of which indeed he is himself often rather careless" ((171),p.60)

and furthermore:

> "Since material wealth exists for the sake of man,and not man for the sake of material wealth, the fact that inefficient and stunted lives had been replaced by more efficient and fuller lives would be of a higher order than any temporary material loss that might have been occasioned on the way" ((171),p.694)

These are the words of an economist who does not live anymore in the dark times of the Industrial Revolution. Marshall's intellectual aim was to provide positive economic and social solutions for the re-allocation of working time in order to improve workers' living conditions without having to give up a high rate of industrial growth. Marshall's approach thus substantially belongs to the reformist tradition of modern labour economists.

In conclusion some minor contributions of K.Wicksell may be noted. The interest of this economist in demographic phenomena and their weight in economic development is well known. Wicksell however did not disregard micro-

economic determinants of the labour supply. On the contrary he underlined their importance and their puzzling nature. Concluding his "Value, Capital and Rent" (277) he pointed out the inconsistency of the assumption of a constant labour supply in economic analysis.

Labour supply could change because labour-power or working time in contrast to every other rentable-good is valuable for its owner even when it is not spent in productive activities. But the exact relationship between wage and labour supply cannot be known a priori.Each problem must be studied separately. Wicksell thus restated Jevons' conclusions and anticipated those of the present Neoclassical theory .

Economic theory was still far from solving the question of a correct measure of the rate of economic growth. Economists - Wicksell wrote - did not yet agree on the evaluation of the optimal ratio among population, capital, land, etc. Unfortunately:

> "Generally demographic problems have always been disregarded by the economists of all schools. This should be blamed from the theoretical viewpoint but of course and still more from the empirical one." (K.Wicksell, (267),p.166)

But there were not many alternatives for the theorist. One could simply suppose that the variations of the population (or labour force) followed natural at all times. This was the conclusion of Ricardo theorizing the existence of a "natural wage". On the contrary one could suppose that population and labour force followed utilitarian calculations. But this then implied a decision about what kind of economic development is the most advantageous to the national collectivity. Wicksell thought that the solution was very difficult and did not propose his own. Micro and macroeconomic aspects of labour supply appeared to contradict each other. Concerning the backward bending curve of labour supply, Wicksell proposed some original suggestions. For instance if the slope of the curve is negative at least in some part of it (because the "money evaluation" of the worker is sufficiently low in comparison with his evaluation of leisure) it is probable that in this case several equilibrium points exist. Marginalist economic theory could potentially treat such complex situations even though the knot of economic relations which derive from the introduction of more realistic specifications were discouragingly difficult to account for.

1.7: The Normative Economics of Working Hours at the Beginning of this Century

Among the many fundamental contributions to economic theory of I.Fisher, his theory of income has been of great importance for modern labour supply analysis even though the American economist did not study the leisure-working-time issue specifically. His theory anticipated the present concept of **full-income** which is fundamental in justifying the simultaneous treatment of consumption and individual supply of labour.As a matter of fact income, in the Fisherian approach, has a meaning which differs from the Classical tradition. While income was identified with the total amount of commodities and services that an economic agent could command, from Fisher's viewpoint income is not received until consumption of money income yields its services. Income, therefore, is seen as a **flow of services** (See W.W.Hewett (113) and G.W.Terborgh (252)).

In **The Nature of Capital and Income** (72), Fisher expounded this idea by emphasizing the importance of **psychic income**. In this book the author drew attention to the basic difference between **enjoyable objective services** and **subjective services**. In short, "goods are not good in themselves. Consumers can enjoy a certain amount of commodities and services but as:

> "it is usually recognized by economists, (...) we must not stop at the stage of this objective income. There is one more step before the process is complete. Indeed no objective services are of significance to man except as they are preparatory to subjective satisfactions." In other words, "in order that the external world should become effective to man, the human body must be considered as the last transforming instrument" ((72), p.167).

Fisher thus concluded that one has to distinguish between two kinds of final income: the **physical** and the **psychical** income namely the **objective** and **subjective** flow of goods and services.

> "We define subjective income,then, as the stream of consciousness of any human being. All his conscious life, from his birth to his death, constitutes his subjective income. Sensations, thoughts, feelings,volitions and all psychical events, in fact, are a part of this income stream. All these conscious experiences which are desirable are positive items of income, or services; all which are undesirable are negative items, or disservices" ((72),p.168)

This definition, according to Fisher, could avoid endless disputes about hedonistic balances.

> "We have avoided expressly the statement that subjective income consists of pleasure, or of pleasure minus pain. These terms have been too loosely used by economists and such use has involved them in unnecesessary controversies with psychologists" ((72), p.168)

The balance between these kind of income was determined by the market rules which equalized the marginal value of all kinds of services.There were, however, some other facts that mattered. Objective and subjective income, which usually balance each other,could diverge for several reasons. One could be, for instance, the investment in human capital. Another could be the different levels of painfulness of labour. In fact, "properly speaking, objective income takes no account of the toil of the labourer" ((72),p.170).

and further:

> "In general we may say that the proper method of appraising the disagreeable element involved in one's work is to deduct from the gross income that sum which the worker would be willing to sacrifice were it possible for him so to avoid the disagreeable element" ((72), p.172)

Hence every flow of services was , from another angle, a flow of disservices for someone else. He who produced the services suffered at the same time for a psychic sacrifice. This could have been considered as having a negative effect on global income.

> "Including the human organism as capital acted upon by the outer world and itself acting upon the inner world of consciousness, we not only carry the uncancelled fringe of services one step further and obtain as net income the subjective satisfactions from the use of food, clothing, furniture, dwelling, etc., but we find it necessary to include also the subjective efforts put forth by human beings in order that these satisfactions may accrue" ((72), p.174)

Labour therefore merely involved disutility. Goods and leisure time became comparable within a process of a utilitarian balance of the economic agent. As a matter of fact both of them generate a psychic satisfaction. We can note at this point an interesting parallel between Fisher's theoretical assumptions and those of the "dynamic" allocative models of leisure and consumption of today. To justify shifts in consumers's preferences some of them make a distinction between **physiological** and **psychological** components of the preallocated or "subsistence" quantities of consumption that enter the utility function of the consumer-worker. Implicitly they assume that consumption is strongly influenced by habit or "psychic" individual evaluation of goods. Or in other words, that income has a subjective nature. This is a source of many problems and controversies of present day macroeconomics. Objective income can be "easily" aggregated since it represents the externalisation of economic agents' preferences, but can subjective income be aggregated and measured to permit an evaluation of economic policies ? Where is the border between a rational choice of disservices of work and the disutility of being unemployed? and so on.

One can conclude that the sophisticated utilitarian approach to consumption theory that Fisher chose reveals important developments today. All marketing and advertising theory is more or less founded on such conceptions, and even labour relations theory cannot disregard them.

The conceptual revolution of Jevons and other utilitarians spread at the turn of the century producing several other minor contributions which enlarged the understanding of the determinants of working time. The introduction of new machinery and new technology had made possible an enormous increase of productivity at the end of the XIX century that inevitably posed the question of a shortening of hours of labour. The attention of industrial economists was thus oriented toward the study of feasible innovations in labour organization. In particular the introduction of shifts appeared an obvious means to permit a growth of industrial production and a shortening of working time.

The climate of these years can be appreciated in the article by S.J.Chapman in the Economic Journal in 1909 (38). The author calls attention

to a new social dynamic which was linked to industrialism:

> "The workmen whose working day has been reduced is soon repeating again his demand for shorter hours; and there are pessimists who infer from this that the shorter hours attained hitherto have shifted the community on to a slippery inclined plane which leads from the economic struggle for existence (...) to economic stagnation" ((38), p.356)

The economic system, Chapman observed, was however much healtier than pessimists believed it to be . The increases in the productivity of labour which derived from a curtailment of working time were so strong that gains counterbalanced losses. In particular the shortening of hours could have permitted the introduction of two or three shifts. The return on capital investment could in this way have been substantially augmented. But, from the social viewpoint, technological innovations and economic growth brought about not only higher wage-rates but, above all, new and higher standards of living.

> "It must be insisted that the amount of the real wage yielded by a given money wage varies as the time left to spend it; and further, that the value of leisure is a function of the goods, which can be enjoyed in the period of leisure" ((38), p. 357).

In this sentence we note a clear statement about the working class's role as a mass of consumers. The obvious conclusion was, therefore, that when consumption per-capita increased, inevitably new attempts to ensure more leisure for themselves would have been made by the labourers. Once again in the eyes of an economist of this period the income effect on labour supply appeared overwhelming. Consequently for Chapman every deterministic scheme about a fixed or exogenously determined working day had to be discarded and the effects of economic growth on working class behaviour could not be dogmatically defined. Chapman concluded:

> "The ideal working day of the future cannot be eight-hours, for it must be essentially a progressive ideal. As a community advances agitation for shorter hours will be constantly breaking out anew" ((38), p.358)

Once more one should appreciate what a difference there is between this approach and the classical and marxist views. Half a century of economic development had made the idea of perpetual subsistence status for the majority of human beings living in industrial societies something like an old-fashioned curiosity. The economic recovery from the Great Depression of the last quarter of the XIX century created, thanks to a great wave of technological innovations, the basis for widespread welfare for large masses of workers. These masses thus began to change their social and economic position: from that of simple suppliers of labour-power to that of mass consumers. Welfare also thus involved new opportunities for individual choices to which production and the market had to refer.

One must at this point mention the remarkable contribution of A.C.Pigou to working time and labour supply analysis. Pigou enlarged the orthodox neoclassical interpretation of the determinants of the hours of labour. Yet his treatment of some aspects (as L.Robbins and further critics pointed out) being imprecise, opened the way for the destructive criticism of J.M.Keynes. The great interest of his **Economics of Welfare** (201) derives

from an abundance of interesting suggestions for labour policies. Pigou was indeed sympathetic to several working class claims.

In line with his liberal viewpoint, solutions to the problems of the working class had to be found through greater efficiency of labour markets and not merely through social reforms and State intervention. Unemployment was seen by this author as a consequence of imperfect bargaining conditions deriving from meta-economic causes. Frictional unemployment which derived from technical progress, labour mobility, productive re-organization, etc. were caused also by a large number of interconnected factors. But if for those reasons unemployment could not fall to zero, there were also factors that could magnify the average volume of unemployment. Unemployment could be fought therefore by introducing more rationality into the exchange of labour services. In particular it is interesting to recall his suggestions of managing working hours to counterbalance fluctuations in unemployment. Surprisingly Pigou was not at all hostile to State intervention to regulate the matter. The attention of this author was above all directed towards finding new possibilities, (carried out by technical progress), of substituting men for hours of works and viceversa. Chapter IX of **Economics of Welfare**, significantly entitled 'Unemployment versus short time' is full of remarkable insights concerning fallacies and potentialities implied by this relationship. Pigou was conscious that a given amount of unemployment would have had different social and political impacts if *widespread*. A fall in demand for labour could have been counterbalanced, at least by means of three kinds of adjustments of labour inputs to output targets:

a) a **dismissal of full-time workers**, leaving the remaining share of manpower to work normally.

b) a cut in the total amount of hours of labour, by means of a **generalized shortening of working time.**

c) a cut in the total amount of hours by **rotating** at the same time, **full-time jobs** among workers.

These three solutions were given in order of increasing complexity. In fact they involved a technical organization and growing collaboration of manpower to accept job re-organization. Generally speaking the first one could have been adopted when depressions were prolonged and when technical innovations brought about profound changes in the production system. Pigou, however preferred the other two. In fact he devoted several pages to the social danger of pauperism which was strictly connected to prolonged and highly concentrated unemployment.

> "There is a definite line between poverty, where struggle and independence prevail, and pauperism"((201), p.524)

The concept was clearly expressed in **The Theory of Unemployment**:

> "If a man is subjected to unemployment for a long period of time, injurious reactions on his industrial and human quality are almost certain to result (...) Evils of this kind do not follow from small doses of unemployment spread over many men, even though the aggregate amount is large They are the fruit, in the main of large concentrations of unemployment upon a small number of especially unfortunate people" ((193),p.16)

He therefore advocated a cut in working time and the introduction of shifts and part-time jobs as the best solution for the working class and the "national dividend". On the other hand, Pigou underlined that many other

questions remained open. Part-time methods were unfortunately not costless. In fact the implicit price one had to pay was undoubtedly a constraint on labour mobility. In other words, a cut of working time would have been economically preferable when firms needed to adapt their production programs to transitory market situations, but it was certainly insufficient when there was a need to radically reshape a business activity.

Chapter VII of **Economics of Welfare** is entirely devoted to the issue of the hours of labour. Pigou's basic argument is that labour involves disutility and shows decreasing marginal returns, so that long working days lead to decreasing productivity. But this result depends,to a great extent on the relationship between work, leisure, and other activities. For instance:

> "(...) particularly women who, besides industrial work, have also the burden of looking after their homes, can, in general, stand less than adult men. Further leisure for them yields a bigger return (...) for better care of their homes" ((201), p.463)

The problem, conceptually simple,was however so difficult to quantify that, he concluded:

> "in view of these considerations (...) no general statement as to the relation between hours of labour and the national dividend can be made. The relation will be different for different types of workpeople and different kinds of works"((201), p.463).

The English economist however thought that an unregulated length of the working day, could have been disadvantageous to aggregate production. For this reason he suggested (following Marshall's opinion) a shortening of hours through the introduction of two or three shifts. In fact:

> "First, workpeople, in considering for what hours per day they will consent to work, often fail to take account of the damage that unduly long hours may do to their efficiency (...)
> Secondly, employers also often fail to realize that shorter hours would promote efficiency among their workpeople, and so would redound to their own interest,
> Thirdly (except in firms which possess a practical monopoly in some department of industry (...) the lack of durable connection between individual employers and their workpeople makes it to the employers' interest to work longer hours than are in the long run to the interest of production as a whole" ((201),p.466)

Pigou in this regard did not deny the role of social institutions.

> "Prima facie it might be thought that (...) self-interest of employers and workpeople must prevent unduly long hours from being worked. There is, however, a large volume of experience, which contradicts this optimistic view and suggests that private self-interest has often seriously failed this matter" ((201), p.465)

He clearly recognized the particular weakness of workers in bargaining hourly regimes. Workpeople when striking for better wages can find common and general reasons. However when they ask for shorter hours of labour this involves a great deal of technical problems and individual tastes that cannot be generalised. Pigou added:

"Moreover if an employer succeeds in exploiting his workpeople in the matter of wages, the poverty which he thus induces in them, will often make them willing to work for longer hours. It follows that, when exploitation is present at all, it is extremely likely to make itself felt in hours of labour too long for the best interests of the national dividend. The effect will be bad everywhere, but especially bad where the persons, whose aggregate efficiency throughout life is liable to suffer greatly from overstrain in youth" ((201), p. 467).

This undoubtedly implied not only the idea of a backward bending curve of labour supply, but, as in Knight's work, also the misleading conclusion that the elasticity of working time to wage was equal to unity. The problem would have been solved by means of the theoretical treatment of Hicks (115), who studied the special case of the consumer-seller of a good (in this case, leisure),by introducing substitution and income effects.

Pigou's emphasis on the labour market's complexities is, in all events, quite interesting. Introducing his Theory of Unemployment he pointed out the fundamental question about dimension in labour market analysis. If employment is a clear-cut concept that can be unambiguously defined and measured as the number of man-hours of work during a period of time, unemployment is completely different and needs several further restrictions to be measured. That is to say to reduce unemployment to the same dimension as employment, normal working hours have to be taken as given also for unemployed people. In reality unemployed people also have their own appreciation of leisure and are not always ready to substitute it for being employed. Therefore the global cost of being unemployed must be corrected and evaluated differently. Pigou strongly believed adjustment of hours would cope with concentrated unemployment. This was another reason why:

"Provided that the hourly rate of wages is not raised, a shortening of the hours of labour does not at all events until there has been time for it to bring about a reduction in the mechanical equipment of factories, make it to the interest of employers to employ fewer workpeople than before. It follows that sufficient interval will be allowed, as it will not always be allowed when wage rates are increased, for the improvements in capacity which they tend to produce, to work themselves out. This means that by the time the danger of dismissals has became real, capacity will often be so far improved as to neutralise and abolish it " ((202), p.468).

A very influential book was published in 1909. W.H.Beveridge's Unemployment: A Problem of Industry which became a reference book for labour economists and politicians. In it there were no original theoretical contributions, yet it was an interesting book because of its normative proposal. Beveridge discussed in it current theories on economic cycles and the common explanations for recurrent mass unemployment. The author stressed the evident impossibility for the market to clear. The supply of labour constantly exceeded the demand. The English economist therefore concluded that unemployment was a problem of industry in the sense that technical progress always created a reserve of labour "as necessary to the system as capital and labour".

The aim for social reformers and political authorities was therefore to

reduce and maintain this reserve at the minimum level. Beveridge pragmatically accepted the unavoidable reality of the business cycle and was not deeply interested in demand and supply determinants. He focused particularly on the institutional aspects of unemployment. In doing so he partly lacked rigour, but, at the same time, he avoided abstractions (often fallacious) common to other theoretical approaches. In his **Unemployment** Beveridge proposed, among other suggestions, to study the possibilities offered by work re-organization. The principal means were: a) a flexible adaptation of labour input to the business cycle through the elasticity of working hours , and b) compulsory unemployment insurance.

> "Elasticity of working hours means that the reserve power to meet growth in the demand for labour should , up to a certain point, be found rather than in the presence of unemployed men standing ready to be employed. Conversely it means that the loss of employment due to a diminution of the demand should by a reduction of hours for all be spread over the whole body of men instead of being concentrated , by complete dismissal, upon a few.
>
> This method of meeting fluctuations is of course, by no means unfamiliar.It is found very completely developed in coal-mining, where, according to the state of trade, the pits remain open for varying numbers of days each week." ((16), p.220)
>
> "It is not, indeed, suggested that a general eight hours' or six hours' a day in slack times should be imposed by direct legislation. The matter is certainly not now one for legislation, even if it ever can be. (...) It will be found probably that in some trades organised short time is impracticable; in others that it would add excessively to the cost of production (...) Yet there can be little doubt that a large field for reform in this direction lies open, if once the principle of elasticity in working hours be accepted by the great industrial associations. The principle of elasticity in working hours, it will be noticed, implies a sharp distinction in policy between times of good and times of bad trade. In the former it is desirable to concentrate the work as much as possible so as to avoid drawing men into the trade who are certain to be unemployed during a depression. In the latter it is desirable to spread the work so as to keep together and not out of distress the men who will be required with any return to prosperity.
> ((16),p.222)

These are clearly solutions which pertain to a kind of "social engineering" that accept the existence of unemployment as a "permanent feature of industrial life". But, as J.Garraty (94) observes, "Beveridge's emphasis on unemployment as distinct from unemployed was modern and forward looking".

From this angle it is easy to understand how Beveridge became, after having been an opponent, an influential supporter of Keynes' theories. In his 1943 book **Full Employment in a Free Society** (17), he realised that unemployment was not an unavoidable consequence of industrial growth. Unemployment could be eliminated without losses in individual freedom by following the new economic policies of deficit spending and demand management. The labour market could become a "seller's market".

Beveridge's intellectual parabola is symbolic. He passed from an old-fashioned pessimism about labour supply to an enthusiastic discovery of a "new era of economic theorizing about employment" ((17),p.93)

1.8: J.M.Keynes and the General Theory

It is well known that labour supply is one of the crucial points that distinguishes the Keynesian approach from the neoclassical tradition. However Keynes's analysis is not, in this regard, particularly elaborate. Despite Keynes's emphasis on consumer behaviour, he apparently did not pay attention to the problem of consumption time (J.Debenest (52)) and he examined only superficially the more general question of the allocation of leisure and consumption. The matter however was not completely disregarded by economists contemporary to Keynes. A.Comish (47), for instance, included among the factors determining the capacity to consume of a country also time and energy.

> "It is in realization of limitations of time and energy that much of our advertising offer labour-saving equipment and articles which do not require time and thought in their use. Leisure with adequate purchasing power should result in greater consumption. Shorter and less strenuous working hours can bring about leisure but the likelihood of such action depends to a great extent upon the technological advance of our productive system and on the inclinations of employers.
>
> However it must be remembered that after all there are only twenty four hours a day and that human energy cannot be conserved and increase indefinitively" ((47), p.294)

Some other passages of various authors which can be found in economic periodicals of that time, show that a relationship between leisure and consumption was, in the 1930's, already recognized, in particular by American economists, but had not yet been integrated into economic analysis. At the meeting of the American Economic Association, in 1932, for instance, J.P.Frey underlined that:

> "for a long time a majority of our economists and our production engineers as well have considered the labourer almost solely from the standpoint of a producer. It is only recently that they have begun to realise that his function in society as a consumer is of equal importance as the part he plays as a producer" ((90), p.5.11)

Keynes' great contribution to consumption theory is too well known to repeat here. His emphasis on mass or aggregate consumption and its effects on income dynamics through quantitative changes of aggregated demand was a peculiar feature of his approach. Keynes also noted relevant differences in propensity to consume between different social classes. He wrote:

> "The subjective factors (of the propensity to consume) include those psychological characteristics of human nature and those social practices and institutions which, though not unalterable, are unlikely to undergo a material change over a short period of time except in abnormal or revolutionary circumstances. In a historical inquiry or in comparing one social system with another of a different type, it is necessary to take account of the manner in which changes in the subjective factors, may affect the propensity to consume. But in general, we shall(...) take the subjective factors as given and we shall assume that the

propensity to consume depends only on changes in the objective factors"((138), p.91)

Keynes gave a "pragmatic" definition of the concept of "propensity to consume" that still seems quite open to obvious amendments:

> "the propensity to consume is a fairly stable function so that, as a rule, the amount of aggregate consumption depends on the amount of aggregate income (both measured in terms of wage units) (...) The fundamental psychological law upon which we are entitled to depend with great confidence, both a priori from our knowledge of human nature, and from the detailed facts of experience, is that men are disposed, as a rule and on average, to increase their consumption as their income increases but not by as much as the increase in their income" ((138), p.96)
> "In the argument of this book, however, we shall not concern ourselves, except in occasional digressions, with the results of far reaching social changes or with slow effects of secular progress. We shall, that is to say, take as given the main background of subjective motives to saving and to consume respectively." ((138), p.109)

One could observe that this pragmatic intellectual framework does not at all exclude a revision of Keynes's concept of income and consumption. But the economics of human time simply did not enter Keynes's field of interest in that period. So a radical antagonism between Keynes's thought and the "new home economics" is probably inexistent.

Nowadays no one seriously doubts that the demand for goods is strongly linked to the quality of goods and to the time which is implied in their consumption (nobody buys a personal-computer if he has no time to use it!) (Hendrix-Kimmer-Taylor (111); D.Hawes, (108); Jacoby-Sybillo-Berning, (132)). Certainly there are social relationships that continuously modify a consumer's preferences (demonstrative effects, for instance), but modern marketing literature clearly recognizes what is called "timestyle " in consumer behaviour. (Feldman-Hornik, (67), p.407). At the same time, there are durable goods that are time-saving for the household and that have their own utility simply because they reduce housekeeping time or/and also allow more free time to consume more of something else (if one buys a freezer or a washing machine he has more time to work and repay the investment or on the other hand to enjoy a larger amount of true leisure) (See Vanek (261))

The second post-war period which has been characterised by high mass consumption has certainly produced a sharp change in subjective factors of the propensity to consume. At the same time the total per-capita working-hours, after the war period started once again to decline (very slowly in America,dramatically, in some cases, in Europe.)

In all events, one misrepresents Keynes's writings by saying that his work substantially lacks interest for consumption time effects. This surprising disinterest can be explained by the events characterizing the period in which Keynes was living. When he wrote **The General Theory** the labour force had certainly less strength than today to constrain the total amount of their services and to obtain the best bargaining terms. Keynes therefore listed as voluntary unemployment the refusal to accept jobs at the wage corresponding to the marginal productivity rate. He stressed instead the importance of involuntary unemployment, believing that it accounted for the greatest share of unemployment. Keynes paid attention above all to the

contrary concern of labour policy, namely how to increase consumption and investment in order to stimulate demand for labour and to fill the gap of such involuntary unemployment.

Hence to substantiate his view he introduced this new notion and the entire Keynesian theoretical effort tended to **de-voluntarise** the former neoclassical theory of labour supply. J.Fender emphasizes the importance of this point:

> "The concept of involuntary unemployment, as well as having diagnostic uses to which we shall shortly turn, is also used to express a point of view about the proper incidence of the responsabilities to which we have just referred. To say that someone is involuntarily unemployed is to relieve him of the responsability for his condition (...) if individuals are voluntarily unemployed, then that is evidently their own business." ((68), p.26).

Nowadays many students of economic thought agree that Keynes typically avoided getting involved in controversies about the labour supply curve's shape. On the contrary, he underlined the **irrelevance** of the determinants of the supply of labour in the process that lead to a certain level of employment. If this choice is peculiar to **The General Theory**, it is stressed even more by the post-Keynesian literature. All the short and medium-run macro-economic (and econometric) models of this school treat two functions of the labour market separately: one for the **demand for labour**, another for **unemployment**. Their sum, at the end, adds up to an exogenously given number of workers. Therefore, the definition of the labour supply is, to this extent, only a residual which is needed to simply complete these models.(J.Fender, ((68)),p.28)

Keynes's thought needs an attentive interpretation. When preparing and defending his **General Theory** Keynes was not indifferent to labour supply questions. In his **Collected Works** (Vol.XIV) (139) one can find a long correspondence with R.G.Hawtrey on this theme. Hawtrey's interpretation of Pigou's approach was focused on the impossibility of defining exactly a collective function of labour's disutility. But this last concept was essential to Keynes's definition of voluntary and involuntary unemployment.

> "Your doctrine of involuntary unemployment or full employment I must confess I do not understand. That is partly because I cannot see how to apply the theory of marginal disutility of labour to a community in which there is unemployment", -wrote Hawtrey. ((139), p.18)

Hawtrey underlined that all the great economists had found difficulty in applying the concept of disutility of labour and had introduced it just to give symmetry to their "static" treatment of labour market.

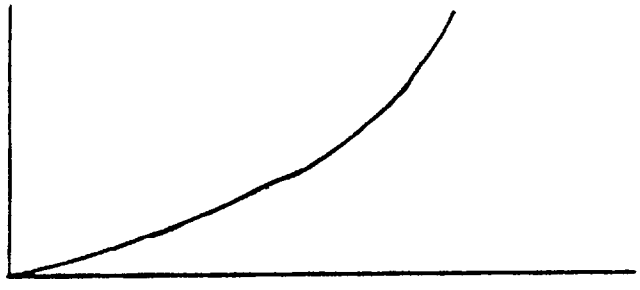
> "Jevons, - wrote Hawtrey- gave a good deal of space to disutility's considerations, but he had "nothing to say either of unemployment or of collective bargaining". And "of uniform hours all he has to say is that it is not always possible to graduate work to the worker's liking. All through he has in mind the man who had the power to vary his own hours of work".

As regard Pigou's analysis Hawtrey argued with Keynes on the correct interpretation of Pigou's ambiguous definition of labour supply. As is well

known, in The Theory of Unemployment, Pigou advanced the apparently strange hypothesis that the number of men available for employment could be assumed to be fixed at a given real wage. Hawtrey underlined that this choice greatly depended on the impossibility of making inferences on the collective utility-disutility balance. In fact Pigou in his first chapter pointed out that a rise in wages could either increase or dicrease the supply of labour. For this reason Pigou in his work considered the number of wage earners not to be a function of wages. Such a number would not be affected by disutility. "He thus eliminate(d) what (Keynes) calls the second postulate from his theory altogether" ((139), p.29). In this sense Hawtrey concluded that "strictly speaking the qualities of utility and disutility are relative to the individual mind"

Keynes on the contrary was not particularly impressed by the puzzling microeconomics of individual labour supply. He cited for instance the famous passage of Marshall concerning "natural" human propensity toward work and leisure and his mention of the backward bending curve, without any particular interest. For instance in Chapter IV of The General Theory he judges these complications not really important when one is dealing with employment as a whole. As regard Pigou's theory he took instead a radically critical position.

> "I am astonished on referring to his book (The Theory of Unemployment) to find that he nowhere expressly tell us what supply curve of labour he is assuming. I have assumed that his supply curve was like this:



> That is to say the supply of units of labour increasing with the wage"((139), p.36)

But Keynes himself used the term "units of labour" rather vaguely. It is true that in Chapter IV of The General Theory he examined the problem of the choice of units, but the relationship existing between the employment of men and the employment of their services is not very clear. The assumption of homogeneity in the supply of labour certainly avoids "much unnecessary perplexities", but this is undoubtedly a weak point in his theory. As we will see later on, it is not distorting the evidence to suggest that Keynes excessively simplified the relationship between hours of work and the number of employable men. As regards the relationship between the wage rate and employment Keynes as is well known, made another "pragmatic" assumption, that is to say: workers bargain for money wages, not real wages. But if this assumption were true then Pigou's world would become inevitably illogical. As a matter of fact saying that the number of employed workers is fixed at a given real wage, means that a rise in the price of wage goods should reduce employment to zero.

Obviously this conclusion was too absurd to be sustained by some people. Hawtrey did not accept such an interpretation.

> "I do not agree with your interpretation of Pigou. What he meant is that there is a practically fixed number of people ready to work at whatever wage the market offers. Wage policy is something outside the volition of the individual and he is content to accept whatever it prescribes" ((139), p.38)

For his part, Pigou was interested in the effects of price changes on the general level of employment and rightly assumed the existence of a majority of working people with no or, at least, very low mobility.

> "It's not the real wage that Pigou makes a fixed datum, but the number willing to work"(...) and that it means the number who desire employment for normal hours at current rates of wages
>
> The existence of a current rate of wages is essentially something outside the volition of the individual. That does not necessarily presupposes collective bargaining. But the man seeking work finds the current rate of wages as something given, and if he chooses to accept less or to stipulate for more that does not in itself alter the current rate" ((139), p.42)

Hawtrey further stressed this point by saying:

> "The supply of labour is something different from the number of would-be wage earners (that is, the number who desire to be employed at current rates of wages) and with a given rate of wages may have any value not exceeding that number. It is neither a function of real wages, as you said, nor a constant as I said (identifying it with the number of would-be wage earners),but is completely indeterminate" ((139), p.54)

The same arguments have been put forward by the same author (and more clearly) in 1954 (109), to criticize Keynesian economists' re-interpretation of the labour supply function. Hawtrey remarked that the supply of labour cannot be directly related to the disutility of labour because the latter depends upon the hours of work, which have very little direct relation to the wage rate. Employees in the short-run cannot decide working hours. In the short-run hours are decided by the employers, but the individual would always desire to be employed for the established hours of work. Fluctuations of working hours are usually the consequence of entrepreneurs' choices involving overtime and labour hoarding.

Keynes' criticism did not allow room for such arguments. Given his implicit assumption of a strict separability between consumption of goods and leisure, in his approach there was no appreciable effort to model the labour market from the supply side. Unearned labour income is essentially a loss of welfare. Therefore labour supply was essentially reduced to the participation rate (which was rationally assumed to be increasing with money wages). In so doing, he adopted, like classical economists, those traditional simplifications that permitted him to remove the embarassing presence of the backward bending curve of individual labour supply.

Keynes easily demonstrated that changes in the participation rate would not have restored equilibrium to the market from the supply side.

"a fall in real wages due to a raise in prices with money-wages unaltered, does not, as a rule, cause the supply of available labour on offer at the current wage to fall below the amount actually employed prior to the rise of prices . To suppose that it does is to suppose that all those who are now unemployed though willing to work at the current wage, will withdraw the offer of their labour in the event of even a small rise in the cost of living. Yet this strange supposition apparently underlines Professor Pigou's Theory of Unemployment, it is what all members of the orthodox school are tacitly assuming." ((138),p.13)

On the other side Keynes observed that:

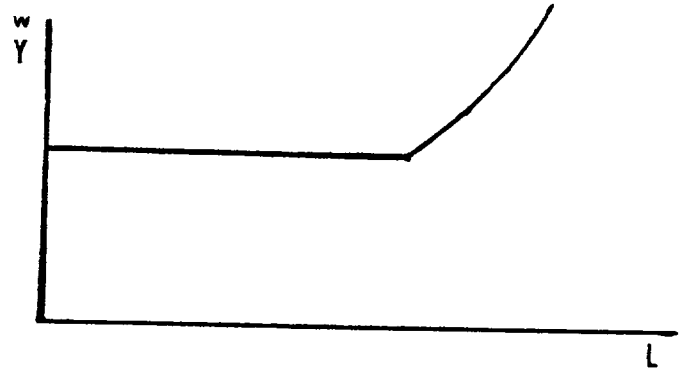
"(...) there may be no method available to labour as a whole whereby it can bring the wage goods equivalent to the general level of money-wages into conformity with the marginal disutility of the current volume of unemployment" ((138), p.13)

In other words, money wages are essentially sticky so that there is no reason to suppose appreciable changes in the labour supply. Keynes wrote:

"Although a reduction in the existing money-wage would lead to withdrawal of labour, it does not follow that a fall in the value of the existing money-wage in terms of wage goods would do so, if it were due to arise in the price of the latter. In other words, it may be the case that within a certain range the demand of labour is for a minimum money-wage and not for a minimum real wage. The classical school have tacitly assumed that this would involve no significant change in their theory (...) They do not seem to have realised that the supply of labour will shift bodily with every movement of prices. Thus their method is tied up with their very special assumptions, and cannot be adopted to deal with the more general case" ((139), p.9)

In Keynes's approach the supply of labour is related to money wages. Money wages however are inflexible under a certain reservation wage. There is however a point of full employment over which the curve begins to be positively sloped or vertical. Keynesian under-employment is a typical situation located in the horizontal segment of the supply function. (See figure 3)

FIGURE 3



These assumptions are considered crucial for many economists to explain all the chain of effects of economic policy. J.Holmes (124) noted that :

> "the importance of the shape of this function for policy lies in the fact that if there is a large amount of unemployment, then public policies which increase the aggregate demand for labour will be more effective in reducing unemployment the closer the actual aggregate labour supply function is to the Keynesian supply function. Conversely the more convex from below the supply of labour under such circumstances the less effective will be governmental policies designed to eliminate unemployment. The extreme non-Keynesian form of the labour supply function would be a vertical line- in which case governmental policies which affect the demand for labour could not affect unemployment at all." ((124), p.797)

The same author observes that the concept of a reservation wage is of fundamental importance too. If one can show that the supply of labour is related to real wages (namely that the horizontal segment of the function does not exist) then Keynesian unemployment could lose a great deal of relevance.Therefore:

> "It can be said, with little exaggeration, that perhaps no single concept is of more basic importance to macro-economic theory and policies governments follow to eliminate the problems of unemployment and inflation than that of the Keynesian aggregate supply function of labour. It is surprising that there has been virtually no extensive or thorough empirical research on the estimation and testing of the validity of this concept. " ((124),p.798)

Coming back to the problem of the "choice of units", one can remark that all post-Keynesian macroeconomic models are developed as if the labour market involved (in the short-run) only **stock** variables (like the real number of labourers). It is evident that labourers, both as an aggregate or as individuals cannot rationally act to dominate the market by shortening or increasing their participation. Only secondary segments of the labour force could decide to work by taking into account only the current level of money wages, even though these wages must be calculated by taking into account also the shadow costs of transport, breaks, clothing,etc. and augmented by the price of special facilities, social services, food, etc. However there are also effects which are related to the length of time spent working as, for instance, in the case of married women). On the other hand it is obvious that the primary segment (that of the breadwinners) in the middle age bracket, never conform to the hypothesis of such take-it-or-leave-it decisions.(Maybe this is one of the considerations that suggested Pigou's hypothesis of fixed labour supply)

But, above all, as every personnel manager knows, in reality groups of workers (both unionized or not) or the individual worker have many ways of balancing real wages and the disutility of work.

All the industrial relations literature is broadly concerned with the connection between feasible working effort and productivity of labour and its cost. E.D.Smith, in 1925, (240) remarked that:

"(...)labour supply cannot be considered solely as a problem of the number of labourers, (...) experience (...) furnishes examples of the fact that maybe many labourers and little effective labour or few labourers and much effective labour (could exist) depending on the effort which labourers put forth " (E.D.Smith,(240), p.101)

The system of industrial relations is more a world of incentives than punishments. More and more (at least since Keynes's time), labour has been assuming the dimension of a flow of services. Workers, in other words, have increased their ability to control their offer of labour in both duration and intensity. The supply of labour thus effectively has a different dimension and nature for the employed and unemployed. If a firm offers goods (or a service) on the market it negotiates exactly the quantity and the quality of such a good and the terms of delivery. Modern labour contracts are quite different and much more complex. First of all a worker negotiates only his availability to work, (for an unspecified duration) (J.Hess,(112); Williamson-Watcher-Harris, (282); H.Simon, (236)), but the intensity and the complete range of functions that he must fulfil is not exactly specified, (in fact workers can also strike by observing all the labour rules strictly). Employed workers that have already negotiated their services also have the substantial advantage of an implicit clause of priority in offering more services through overtime or moonlighting. Moreover they can revise the length of annual, weekly and daily working time and job evaluation. They can therefore determine whether to ask for a shorter working time and therefore the hours available for new workers. This kind of contractual advantage is specific to the labour market.There are reasons to assume that the demand for new labour services can be satisfied only after the employed workers have reached some equilibrium point through their allocation of leisure and consumption. Keynes, by means of a great simplification, criticized specifically what he claimed to be the second postulate of the classical theory:

"The utility of the wage when a given volume of labour is employed is equal to the marginal disutility of that amount of employment" ((138), p.5)

But on the basis of the former observations, what is, in aggregate terms, the total amount of disutility of work? How can the **disutility of work** of employed workers be added to the **disutility of non-work** of unemployed people?. There are some further practical considerations to point out in this regard.

Let us consider socialist economies. Unemployment does not officially exist. Prices are fixed as are money-wages. In the absence of a price mechanism, equilibrium can be reached by means of quantity adjustments. Economic agents could then be subject to rationing constraints. A situation could exist in this case which, in the disequilibrium literature is called **suppressed inflation.** (R.Barro-H.Grossman, (10), D.G.Howard,(128))

In this case there are no unemployed workers, because labourers voluntarily retire from work.Even though in such systems the allocation of time and resources may be wastefully managed, no one ever suffers from wanting work and being unable to find it. In such a system there would be no involuntary unemployment, but the **content** of employment would have become involuntary. (J.Fender, (68),p.36). Given that the labourers even if employed, cannot fully satisfy their preferences with regard to consumption

and leisure time, they usually decrease their working effort. Thus they individually restore the equilibrium between disutility of work and utility of consumption. There is evidence to suggest that even in Western countries the aggregate labour supply reacts noticeably to changes in real wages. Of course it is probable that when real wage rates decrease labour relations also worsen for employed workers so that the fear of being fired when unemployment is high could increase individual productivity. But the real importance of such phenomena is arguable.

Furthermore, the impact of unemployment depends upon the way it is absorbed by social groups, particularly the family. But at this point the question becomes extremely complex and ambiguous. The allocative choices of the family, at any rate, cannot be over-simplified by means of functions of average money wages only. Therefore it is only at the price of a high abstraction (common in any case to other great economists) that Keynes's emphasis on the relationship between the money-wage and participation rates can be appreciated. In the 20th chapter of **The General Theory** Keynes arrived at his principal conclusion:

> "(...) when effective demand is deficient there is under-employment of labour in the sense that there are men unemployed who would be willing to work at less than the existing real wage. Consequently, as the effective demand increases, employment increases, though at the real wage equal to or less than the existing one, until a point comes at which there is no surplus of labour available at the existing real wage: i.e. no more men (or hours of labour) available unless wages rise (from this point onwards) faster than prices" ((138), p.289).

The normative economics which derived from this logical deduction as is well known, prescribes that until there is unemployment, effective demand is too weak and prices must move slower than money wages. Workers' willingness to work a standard amount of hours does not change; therefore, any increase of aggregate demand needs greater employment. But if the labour market is not really homogeneous then we must deal with particular supply curves and, as Keynes wrote, "interesting complications" may arise.((138),p.43)

Working time is seldom simply inversely proportional to the number of employed men; and firms are not indifferent to the choice of dismissing men and, at the same time, lengthening hours or cutting hours and hiring new workers. This simple arithmetic has been periodically applied and criticized. In 1930 the TUC demanded a 40-hour week. This was also a suggestion of the ILO to cope with mass unemployment. By decreasing the working week without money wage reductions, effective demand should not have fallen, and more and better distributed employment would have reinforced it. Yet employers strongly resisted this proposal (See R.Lowe ,(159)). They clearly realized that lower working hours reinforced the contractual power of the labour force without ensuring greater flexiblity in its use.

Keynes obviously did not ignore alternative solutions to the unemployment problem. Pigou and Bevedrige's proposal of preventing disruptive effects of high unemployment by distributing it among the employed pool did not win Keynes's approval. He judged such proposals "premature policies". Certainly he noted that, at a certain level of income, the consumer prefers to increase leisure instead of income.

> "But, **at present**, the evidence is I think, strong that the great majority of individuals would prefer increased income to increased

leisure; and I see no sufficient reason for compelling those who would prefer more income to enjoy more leisure" ((138),p.326: "Notes on the trade cycle"; (our emphasis))

Keynes's disinterest for such issues reveals some hidden aspects of his thought. In the quoted passage he talks of "compelling" all the workers to work less hours. It seems therefore clear that he admitted the impossibility of modifying the existing collective and inflexible hourly regimes. But this is precisely the point on which the "liberal neoclassical school" focuses. The labour market should be first of all free, as much as possible, from constraints such as those created by modern collective bargaining so as to choose individual working burdens.

L.Von Mises wrote:

"It is generally assumed that the individual wage earner has only a negligible influence on the determination of the terms of the labour contract. (But) the employers are not asking for labour in general, but for men who are fitted to perform the kind of labour they need. Just as an entrepreneur must choose for his plants the most suitable location, equipment, and raw materials, so he must arrange conditions of work in such a way as to make them appear attractive to those classes of workers he wants to employ."(L.Von Mises, (264), p.613)

Even though the single employee have very little power to change the labour contract, one cannot conclude that he has no power at all.

These collateral observations throw light on Keynes's elitist and authoritarian conceptions. S.Ricossa (211) put Keynes in the field of "perfettist" intellectuals. In their view, human society is troubled by the "economic" problem. But individuals are not essentially responsible for it. They have no moral guilt. Unemployment (when it is involuntary) is after all an abnormal deformity of economic society. And this fault diminishes every other merit of present capitalism, such as wealth and a high standard of consumption for large masses of workers. Keynesian macroeconomics is egalitarian because it is only the "statistical", average man that matters. Microeconomics instead underlines and studies the different tastes of every individual, for a given distribution of endowments. But in Keynes's view the individual cannot be rational, because he basically does not know what he is doing. J.Fender (68)) expresses himself in similar terms. Involuntary unemployment derives from an imperfection of the economic system.

"It is not that the individuals involved lack the willingness or ability to work, but rather that the economy is failing to provide them with the opportunity to do so" ((68),p.27)

To be fair one must observe however that Keynes advanced all his propositions on the basis of "pragmatic" (and not absolute) assumptions. So the object of the former criticism would be even better directed against the following post-Keynesian literature. And , at this point, we find ourselves faced with troublesome issues that cannot be dealt with here. It is sufficient to say that re-inserting a different labour supply function into models of the labour market, justifies contrary interpretations of the same facts.

M.Friedman (86) has observed that in recent times inflation has accompanied higher unemployment and that is probably due not only to revised expectations,

but even to institutional and political adjustmentsto new realities. M.Wallace (270) has translated this remark into a Phillips Curve with an inverted slope, deriving it from an aggregate function of a backward bending labour supply.

Other economists recently strongly criticized Keynes's assumptions about the labour supply. R.Hall (104) for instance, underlines that the practical reality of sticky wages and prices which Keynesian models invoke does not solve the theoretical problem concerning the absence of effects from the supply side. Why is labour off its supply curve? Why is what happens in the labour market entirely adapted to what firms want to do or, in other words, why does supply lose and demand win? In Keynesian or disequilibrium models there are no clear answers.

R.Lucas, whose paper (edited with L.Rapping) (161) marks the beginning of a new revival of macro labour supply theories, further underlines that:

> "Chapter I of Keynes' 'General Theory' should be read as a declaration that "unemployment was not explainable as a consequence of individual choices and that failure of wages to move as predicted by the classical theory was to be treated as due to forces beyond the powers of economic theory to illuminate (...) Keynes wrote as though the involuntary "nature of unemployment were verifiable by direct observation, as though one could somehow look at the market and verify directly whether it is in equilibrium or not" (R.Lucas, (154), pp.11-12)

But a crucial problem from Lucas' viewpoint is rather to explain why, within a framework of cyclical phenomena, in the face of moderately fluctuating nominal wages and prices, households should choose to supply labour at very irregular rates over time. Lucas' method of inquiry is contrary to Keynesian reasoning. Workers conform substantially to their labour supply curves and temporary changes of nominal prices and wages can induce sharp responses in the labour supply because they like other economic agents are able to correctly extract the right signal emanating from economic indicators. From these observations "new classical models" arose which reformulated the labour supply function in terms of allocative intertemporal choices of leisure and consumption. These models, further developed into "rational expectations" models have been the most serious attack on Keynesian orthodoxy.

But besides these aspects of the present theoretical debate, labour economics has added a huge quantity of empirical evidence about numerous effects concerning the labour market. R.Solow (242) reminds us that labour market analysis cannot be simplified too much without loss of realism. The labour market is not a homogeneous pool to which firms' demand can be directed. Some reasons can be pointed out. **Firstly**, the presence of institutional unemployment insurance interacts with labour supply decisions. **Second**, no single agents exist, but groups (households) that have a wide range of feasible choices and that collect more than one source of income. There are customs and habits that enter as arguments within the utility function of the agents.(G.Akerloff (3),(4)). **Thirdly**, the existence of a large amount of time free from paid work and high household investment make household production a hidden but not insignificant source of income. Recent empirical studies put it at between 30-50 % of American GNP. Do-it-yourself activities involve business larger than some traditional industries. **Fourthly**, markets are highly segmented so that unemployment does not spread over all industrial and economic sectors to the same extent. **Fifthly**, it is difficult to measure the "correct" price of labour. The existence of money

and time costs related to working activity, which are particularly important for part-time jobs, contribute to a weakening of macroeconomic assumptions about sticky money wages. Sixthly, regional mobility of labour is often low. Unemployment thus can be concentrated in some regions and there could be difficulties in moving the labour force to places where capital investment could be profitable.

In conclusion a Keynesian approach to the labour market nowadays needs to be corroborated by a corollary of microeconomic analyses which may alter many of the traditional conclusions about full-employment economic policies and offer a wide range of suggestions for specific labour problems.

1.10: Slavery and the free labour market: is there a historical antagonism between them?

At this point we embark on a necessary digression. Usually in Western countries economists regard unemployment as the worst evil or the greatest danger for social stability. Therefore little attention has been paid to the consequences of the opposite phenomenon, namely shortage of labour. It is true that the latter has been an infrequent contingency in history. But its terrible effects have not always been clearly understood. Yet some of the worst social conflicts originated precisely from insufficient labour supply.

Slavery is, by definition, the radical solution to an unsatisfied demand for labour. To underline the relevance of this matter we can put forward some arguments: i) During the present century, while J.M.Keynes and other modern liberal economists were formulating their theoretical constructions, a powerful and advanced economy, i.e. Germany, was planning and trying to dominate new territories and other populations to build its own economic system on new slavist bases, until it was stopped at the cost of the greatest catastrophic war in human history. In Asia, Japan introduced forced labour in Manchuria and in other occupied regions ii) The socialist system of the Soviet Union, in the same period, made great use of forced labour for development goals. As far as we know the recent Cultural Revolution in China and the revolutionary regime in Cambodia also introduced new (or old) forms of forced labour under the label of re-educative centers. iii) Moreover economic history cannot disregard the fact that the most powerful economic system in the world, i.e. the U.S. economy, abolished slavery only a century ago. Forced labour appeared also in the modern history of the English empire. And Latin America experienced slavery too.

These statements are so strong and disturbing that they must be further substantiated. E.L.Homze (126) pointed out that the first symptom of a new tendency toward modern enserfment formally appeared in Germany during the First World War. A shortage in the labour force induced military and political authorities to order a forced deportation of Belgian workers into Germany. Massive forced employment of prisoners of war was another symptom of the tendency toward an authoritative regulation of the labour market.

But the greatest revolution in this field came when the Nazi Party took over power. Collective bargaining, unions and labour institutions were the first targets of the Nazi attack. A revival of medieval conceptions about the workers' position within the national community, led to a progressively all-pervasive regimentation of labour conditions: labour mobility, hours of work, wages, job evaluation, etc. The workers were seen as "soldiers" that had only one "right", namely "that resulting from the observance of duties which are assigned to every individual" as R.Ley, the head of the German Labour Front, wrote. (O.Nathan (187))

The repressive Nazi labour policy was a consequence of the denial of the economic, competitive and individual foundations of labour relations. The Nazis did not accept the idea of a rational utilitarian approach in labour bargaining. To think of Nazi ideology and policy as the extreme product of monopolistic capitalism power however would be simply wrong.

O.Nathan observed that:

> "In historical perspective the system of Nazi labour relations looks like an atavistic mutation (...) Under the Nazis it was not exactly a slave status that was restored to (workers). They were not held in property by entrepreneurs. But they were no longer free to exert over-pressure to improve their circumstances. They had to accept the

assignment and remuneration with no appeal, no opportunity to seek redress. This was not necessarily accompanied by deterioration in working conditions. Even the holder recognized that his labour force was a capital investement to be kept in good working order for as long as was profitable. The Nazis, no less astute, realized that their ultimate objectives required workers in good health and if possible, in good morale" ((187), pp.173-74)

At the basis of the vague Nazi projects of social reform there was once more the allusion to economic reality and the willingness to dominate the pattern of economic growth exogenously. As in the Mercantilist age, problems of the labour market were seen chiefly as problems of simple productive efficiency, and not as problems of social and industrial relations. The labour market did not need to live within a complex and diversified net of competitive social institutions and under the pressure of many conflicting social groups. Work was not correlated with consumption and therefore with income distribution. Consumption and investment decisions did not have to derive from an endless revision of market equilibria and price adjustments. They had to be harmonized within a meta-economic growth of national power. The intention of Nazi labour was:

"(...) to oppose the multiplicity of employers' and workers' organizations with the creation of the German labour front. This is designed to hit not only the last refuge of Marxism, but also to bring to an end the unhappy splintering of the working populations. Petty and selfish individuals are unwilling to recognize this great revolutionary act and are trying to weaken this work with imitations and self-help organizations" (Michaelis-Schraepler, (179), p.642)

The Nazi party's labour policy thus has been characterized by an authoritarianism in the management of the labour force. But it solved unemployment and eliminated shortages of labour supply even if at the price of the well known aberrant results. To think of a purely anti-socialist and repressive policy in Nazi Germany can be misleading however. What should not be forgotten is the wide consensus among German middle and upper classes created by the economic successes of the pre-war period. During the 1930's the Nazi economic policy thwarted all the prophecies of a speedy collapse. The new system revealed itself instead as exceptionally stable.Nazis first started a vigorous anti-depression program which in many aspects anticipated the suggestions of Keynes to set the economic recovery in motion by means of public expenditure. In 1936 full-employment was achieved and in the last two pre-war years even over-employment was achieved. But the price was high. However much Hitler's personality was to blame for the German policy, the replacement of a modern market economy by an authoritatively managed system probably led to more aggressive foreign policies.

It is also interesting to remark that in some ways also the moderate Italian fascist regime typically refused to follow pure market rules in this field and tried to stop and avoid conflicts by means of authoritarian political solutions. Around 1930-33 the debate about reducing working time also interested the corporatist Italian economists. The unwillingness to refer to market rules for industrial relations problems emerges from the words of one of these economists:

"(...)For me the question of the length of working time is

contained in another (and solved by a dogmatic) approach : is a collective discipline of industrial relations possible? - or in the other more general one: does there exist a possibility of ruling every economic relation collectively? (...) Ten or a hundred hours of work would be all the same to me if they were justified by the superior economic national interest and by the aims that are thought useful for the national collectivity" (R.Galli, (93), p.425)

The refusal to recognize the fundamental importance of individual choice justified corporatist experiments which,(like their remote historical precedents), enslaved labour market forces in regimes of low wages and low consumption (V.Zamagni (286))

Quite different and even more surprising is the Soviet evolution from proletarian revolutionary hypotheses to an intensive use of forced labour. The Soviet emphasis on the elimination of unemployment (which in some ways often upset Western intellectual faith in the supremacy of the capitalist system) has been a keystone of the ideological construction of **real socialism**. Inside the consolidated post-revolutionary USSR of the 1930's "the guarantee of a job was accompanied by an insistence that everyone should work". As J.A.Garraty observes:

"Something approaching forced labour was decreed; only a doctor's certificate would henceforth be acceptable as a reason for refusing a job assigned by a state labour exchange" And " in 1930 the government boldly announced that unemployment no longer existed. To demonstrate that this was indeed the case, the Soviet unemployment insurance system was dismantled" ((94),p.153)

But this was the official facade. Even the most unconcerned student of the "dismal science" should not disregard the denunciation of the Stalinist system made by Russian dissidents. Official statistics on the phenomenon are obviously not available, but the dimensions of this drama can also be at least perceived by reading non-economic works. The hidden side of the system is described in Solzenicy's **GULAG Archipelago** (241). From a strictly economic viewpoint several interesting observations can be found in S.Swianewicz' work (249). He makes a sharp distinction between Soviet forced labour and slavery.

Forced workers were (and are) such only for a limited time. They cannot be privately owned. The status of forced labourers was not formally inherited. However the usual practices often made these distinctions very vague.

"Thus in the Stalinist Soviet Union a new social stratum was in process of formation, the hereditary position of which was approaching that of "untouchable" in India" (...) "In the historical perspective Soviet forced labour could be considered as a stage or the way to a new social stratification which might have involved slavery,though this trend was interrupted and even reversed by subsequent events" ((249),pp.21-22)

This involution of a regime that promised real freedom to everybody and to the working class in particular, was in fact reinforced by the presence of bottlenecks in the labour market. The Stalinist strategy of building socialism in an isolated country imposed the necessity of short-run industrial growth. But given that technical progress was not sufficient to create high productivity, the "natural" solution was to expand the existent

industrial branches at the current stage of technical progress and to make extensive use of labour. In the Russia of the 1930's agricultural productivity was very low and also negative. There was therefore a huge amount of available labour. But the mobility of the working force toward the new industrial centers was not sufficient to ensure an efficient transfer of productive factors between the two sectors. Notwithstanding higher wages and a higher standard of living for the industrial labour force, the mass recruitment campaign substantially failed. The draining of the labour force from the country decreased agricultural productivity without solving industrial problems. To examine all the reasons for such a paradoxical result would take too long. In brief one can recall A.Maddison's analysis (157). (a) The transition from peasant ownership to collective farms was extremely costly and caused lasting damages. (b) Management was inefficient, because the control of equipment was not in the hands of the farm enterprise. (c) The use of centralized directives and the absence of efficient markets were particularly inappropriate to agriculture. (d) The effective taxation of peasants was pushed to lengths which became a major disincentive to production. (e) Agricultural research was inefficient. (f) Agriculture did not benefit from any particular incentive.

The consequence was a passive resistance to forced collectivization methods. The Soviet regime still partly solved the problem through the use of extensive forced labour, in accordance with different contingencies. The peak of this practice was reached in the years preceding World War II and during it. That was the period of mass deportation of manpower from Poland, Rumania, the Baltic regions and other areas. The death of Stalin fortunately reversed the tendency.

An economic explanation for such phenomena is to be found in the natural opposition of Soviet ideology to the alleged link between the labour supply and consumption standards. The Soviet project of achieving industrial growth at a very high pace despite constant (or almost constant) consumption levels originated precisely from this opposition.And it is of interest to note that, despite some Western theoretical perplexities in this regard, the Soviet experiment has clearly shown the existence of three dimensions of the labour supply, each of which contributes to an adjustment in the exchange of labour services:

First of all, **participation rate** -the Soviet planners solved this problem through strong material incentives to female participation. Low individual wages with the guarantee of a job for everybody acted, via the intra-family distribution of income, as a strong stimulus to high levels of activity. Besides that, Soviet policy makers adopted the forced labour solution in the extreme cases.

Secondly, the **length of working time** was increased through competition (Stakanovism), overtime premiums and other material incentives, discipline and punishment.

Thirdly, attempts to increase both the **intensity and quality of labour** were made through competition and repressive means.

In conclusion, labour issues in USSR have always been (from the productive viewpoint) treated in terms of an unsatisfied demand for labour.

History, therefore, has clearly demonstrated that industrial growth and national power are not at all linked to a precise scheme of evolution of industrial relations. Modern industrial systems need not be inserted within political democracy and/or competitive markets. Unemployment is therefore only one of the possible evils for the labour force. "Full employment within unfree economic systems" can not only survive, but also develop, and this combination has been much more frequent than that of "full employment and

individual freedom".

L.Einaudi wrote:

> "Within a structure that is necessarily hierarchical, human relations are based not on freedom but on dependence. Anyone who does not wish to be out of the system can avoid this relation of dependence (...) These observations are not a criticism of the men at the top of the hierarchy in a collectivistic society. These men must act in that way if they wish the social machine to work; (...) Just as during a war the ultimate punishment for rebels is to be shot, so also in a collectivistic society the ultimate punishment is and could be nothing less than forced labour." (L.Einaudi (61))

Classical, Marxist, Neoclassical, Keynesian and Radical economists all agree on the historical superiority of a free competitive labour market over a slave system and it is a commonly held belief that slavery could not survive the Industrial Revolution. For instance, back in the XVIII century, A.Smith attacked slavery on the basis of these arguments. (237),(238). J.Paget, in 1839, describing the old system of enserfment in Hungary and Rumenia, wrote:

> "The system of rent by robot or forced labour, that is so many days labour without any specification of the quantity of work to be performed is a direct premium to idleness" (J.Paget (195),p.305)

W.Jacob, in writing on Poland's slavery system remarked, in 1826:

> "as may be naturally inferred from the system under which labour is applied to the land, that labour is performed in the most negligent and slovenly manner possible. No manager of a large estate can have his eye constantly on every workman; and when no advantage is gained by care in the work it will naturally by very imperfectly executed" (W.Jacob, (131), p.63)

But it was J.C.Cairnes, who devoted an important share of his work to studying the issue of the slave market. He tried, in particular, to destroy every rational justification for the existence of such a system by strongly supporting, at the same time, during the American Civil War, the Northern forces. He therefore deserves the title of "the last of the principal architects of the economic indictment of slavery" (Fogel-Engermann (78)).

Cairnes' book: **The Slave Power** (31) not only made a great contribution to the abolitionist campaign but it also had a great impact on the studies of other contemporary economists. Marx and Jevons, for instance, expressed their admiration for that book and many other writers contributed to spread Cairnes' ideas about the obsolescence of slavery.

Consistent with his liberal view Cairnes underlined the inefficiencies and disadvantages of slavery. Fogel-Engermann (70) however stressed that Cairnes had never visited the slave states and that his theories were substantially inspired by themes formerly enunciated by Olmstead. But why did this system survive so long if it was so inefficient? Cairnes thought that profitability of slave economies derived from four special conditions:

i) the absolute power of slave owners over their workmen. This permitted large economies of scale.

ii) a high concentration of labour per unit of land in order to keep the costs of supervision down.

iii) an unlimited extension of territories and high soil fertility to practice extensive cultivation.

iv) an interregional slave-trade to adapt the ratio of labour/land.

Cairnes, in short, admitted the existence of some economic reasons for the past development of slavery, but he underlined the impossibility of such a system competing with a modern industrial system and keeping pace with its rival's general economic growth. Slavery was inevitably linked to extensive agriculture and for just this reason was inevitably slipping into decline.

Even relatively modern economists indulged in such explanations. Let us take as a classical example L.Von Mises' view. He wrote:

> "(...) experience has shown that these methods of unbridled brutalization render very unsatisfactory results. Even the crudest and dullest people achieve more when working on their own accord than under the fear of the whip (...) The abolition of slavery and serfdom is to be attributed neither to the teaching of theologians and moralists nor to weakness of generosity of the part of the masters (...) Servile labour disappeared because it could not stand in competition of free labour; its unprofitability sealed its doom in the market economy" ((265), p.630)

These arguments had an enormous impact on intellectuals and remained unchallenged until very recently when, among others, the cliometric school began to reconsider the real economic incongruence of slavery.(R.Fogel,(78),Fogel-Engerman,(79)) Unfortunately these assertions have not been demonstrated at all, neither by historical enquiries, nor by economic analyses. Many instances may be shown in the economic history of different countries of a process of substitution of free labour by serfdom. In the fifteenth century, for instance, Eastern Europe displayed a large diffusion of free peasantry. During the following centuries there was a progressive weakening of peasants' rights and a tendency to expand enserfment.
(R.Millward (182)) Negro slavery itself is the best example of the renaissance of past economic conceptions. When (as in the case of the exploitation of new depopulated territories in America) there are constraints on labour supply, there is always a tendency to choose the radical solution of forced labour.

These bitter and disturbing conclusions derive for a great deal, from the pioneering studies of two Chicago economists, Conrad and Mayer (48) who opened the way for a reconsideration of the history of slavery. They first argued the aforementioned liberal conclusion concerning the disappearance of slavery in America.

Historiography had traditionally stressed the contradiction between the growth of Northern industrial sectors and Southern agriculture. Plantations which made use of slaves were obsolete economic enterprises which immobilized huge amounts of capital and opposed the diffusion of new technologies. The global economic development of the U.S. however needed a high mobility of labour and capital and it was spreading technical progress at a very fast pace. The clash of these two antagonistic economies was therefore unavoidable as was the success of the more advanced Northern economy.

By collecting a large quantity of statistical data, Conrad and Meyer have shown that before the Civil War the Southern U.S agricultural system was in no way economically weaker than the Nothern. This thesis has been further enriched by other contributions. (J.D.Foust-D.E.Swan,(84); R.Sutch,(248),

H.D.Woodman,(283); G.Wright,(285))

From a rigorous analytical viewpoint, T.Bergstrom (14) has proven that an optimum competitive equilibrium can be defined for a slave economy just as for any capitalist economy with a free labour market. He concludes therefore that the system may be condemned only on moral and ethical principles but not on the basis of rational utilitarian reasoning. G.Canarella and J.A-Tomaske (32), whose analytical apparatus is however less sophisticated, arrive at the same conclusions. These authors underline that even the brutal and sadistic discipline of the system (which is the most disgusting feature of slavery) can be considered as a result of a minimizing calculus about the costs of order. Slavery had thus an internal tendency to limit violence to "minimum" levels.

Another basic point is the relationship between slavery and technology. (R.Starobin,(245)) Was there an unavoidable contradiction between them? According to this school of economic historians the answer does not appear to be negative. R.K.Aufhauser (7) argues that the rejection of certain technological developments had its own rational economic reasons. Labour-saving innovations could be accepted only when they did not undermine the plantation's discipline and when they had no perverse effects on the "full employment" of the available manpower. On the other hand, other technologies experienced immediate and widespread diffusion. In another paper Aufhauser points out many similarities between slave management and the scientific management of F.W.Taylor, that is to say the keystone of the modern organization of labour production.

> "(...) contrary to the common belief, the administration of labour was carefully studied by the slave-owner whose achievements in this regard anticipated those of Taylor himself" ((6), p.814)

Aufhauser compares G.Fitzhugh (the ideal type of slave-owners' worldview) and F.W.Taylor (the "father of modern work") First of all both of them conceived human society as deeply divided between management elites and masses of workers which were sluggish, incapable of individual initiative and too stupid to produce efficiently without the constant supervision of a mentally superior guide. Of course Taylor did not approve or consider a property right over men, "but the practical content of the laws of Taylor are not far removed from those that Fitzhugh defends" ((6), p.814)

Many other similarities can be found in the specific points of their approach to the productive discipline issue. They consist in the adoption of: i) simple routines; ii) job enrichment; iii) task work design; iv) physical coercion. The most controversial point is obviously the fourth. As a matter of fact, any modern industrial system cannot admit a specific use of violence to impose discipline and to manage the labour supply. But the difference between the two opposite systems becomes less marked when one considers the role of the State. Thus Aufhauser points out that:

> "(the) argument that the types of discipline in slave and scientific management enterprises are similar would suffer if the slave were to see the lash as the ultimate source of compulsion, and the free worker were to fear primarily the State. But if the lash poses the same kind of threat that firing does to the free worker, if both result from a violation of established rules rather than the managers irrational outburst, and if power is seen both by the free and the slave worker to reside in the State, not the manager, then the practical content of discipline may not vary much between labour regimes" ((6), p.820)

Finally one cannot conclude these short notes without mentioning the study of Fogel-Engerman (79) who applied cliometric methodologies extensively to this specific issue. Their book Time on the Cross gave rise to an endless debate on the historical role of American slavery. In fact they believe they have proved the following disturbing points:

> "1. Slavery was not a system irrationally kept in existence by plantation owners who failed to perceive or were indifferent to their best interests (...)
> 2. The slave system was not economically moribund on the eve of the Civil War (...)
> 3. Slave owners were not becoming pessimistic about the future of their system (...)
> 4. Slave agriculture was not inefficient compared with free agriculture (...)
> 5. The typical slave field hand was not lazy, inept, and unproductive.
> 6.The course of slavery in the cities does not prove that slavery was incompatible with an industrial system or that slaves were unable to cope with an industrial system. Slaves employed in industry compared favourably with free workers in diligence and efficiency (...)
> 7. The belief that slave-breeding, sexual exploitation and promiscuity destroyed the black family is a myth. The family was the basic unit of social organization under slavery. (...)
> 8. The material (not psychological) conditions of the lives of slaves compared favourably with those of free industrial workers (...)
> 9. Slaves were exploited (...) however the rate of expropriation was much lower than has generally been presumed. Over the course of his lifetime, the typical slave field hand received about 90 percent of the income he produced (...)
> 10. Far from stagnating, the economy of the antebellum South grew quite rapidly. Between 1840 and 1860, per capita income increased more rapidly in the South than in the rest of the nation. By 1860 the South attained a level of per capita income which was high by the standards of the time. Indeed a country as advanced as Italy did not achieve the same level of per capita income until the eve of World War II" ((79), pp. 5-6)

Following this line of thought one can therefore conclude that if slavery or forced labour cannot become the dominant productive system of the modern age, there are however many reasons to suspect that this system or other similar ones could survive and reproduce themselves, at least from a hypothetical point of view, side by side with a technologically advanced system. The solution to this evil has to come from the world of ethics. Economic growth and pure economic interests provide no clear answers.

1:9. L.Robbins:the positivist approach to labour economics

Around 1930, L.Robbins made one of the most important contributions to labour supply theory. In 1929, a year before his celebrated paper in the Economic Journal, (214) , he published another minor article on the economic consequences of variations in working hours. The paper aimed at illustrating the complex problem involved in all the causal links between work, hour regulation and productivity.

> "The days are gone when it was necessary to combat the naive assumption that the connection between hours and output is one of direct variation, that it is necessarily true that a lengthening of the working day increases output and a curtailment diminishes it ((213)",p.26)

But many other questions were unfortunately still left unanswered. One must in fact first of all separate the long and short-run effects.

> "A length of day that would maximise output for a month or a year would not necessarily bring it to a maximum if a period of many years was contemplated. A length of day that maximised output during a short war would not necessarily maximise it during a long peace." ((213), p.27)

Great caution should therefore be exercized in generalizing on the first impressive deductions. This is also true for the opposite conclusion that a shortening of the working day always means a larger relative output.

> "during the nineteenth century, for instance, the average duration of the working day was considerably curtailed. At the same time there was a fairly continuous increase in output, and from this it is sometimes argued that the length of day actually worked at the outset was beyond the point of maximum productiveness. No deduction could be more illegitimate. A general increase in productivity may make the yield to a shorter day before, even if without the reduction, output would have been still greater and of course during the nineteenth century productivity in general was increasing."((214), p.27)

Robbins admitted the existence from the aggregate and social aspects of a trade-off between income and leisure. As a matter of fact there was no evidence to exclude the suggestion that the potential income of past societies could have been higher than their final results. In turn this could mean that the economic growth of a country cannot be fully measured by disposable income alone.

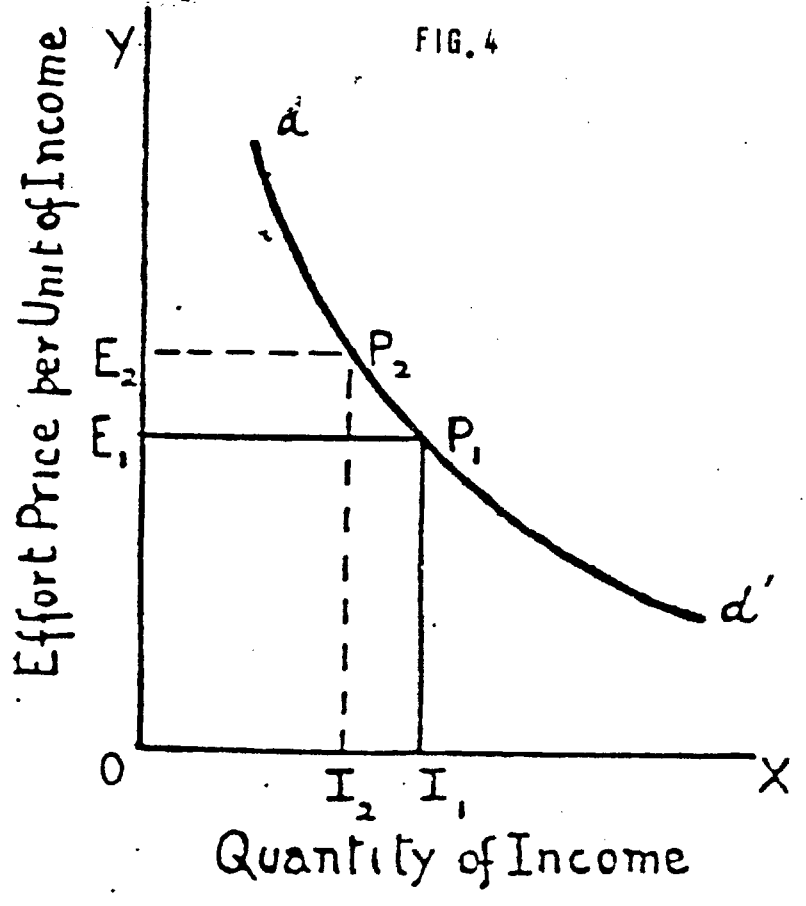
Coming back to Robbins' reasoning, the total effect of diminishing working time depended greatly on the structure of social groups. There are groups of wage earners with different elasticities of demand for their services. Thus by assuming no changes in production techniques and perfect wage flexibility, a variation of working hours leads only to an income redistribution among such groups. If wage rates are not flexible (and this is the reality) then the mechanism will not lead to the same result, but to a biased one. Robbins furthermore noted that collective bargaining is concerned both with wages and regulation of hours, therefore:

"(...) this means that until the contract is revised, wages themselves are rigid. By fixing the rate and fixing the length of the working day the daily wage is itself predetermined. (...) The general disposition of the market to buy, as exhibited in the demand schedules we have been discussing, does not change when the price prevailing ceases to be flexible. All that happens is that the effects of variations of supply exhibit themselves in a different fashion. Instead of the price accomodating itself to the given supply so that the actual quantity demanded clears the market, the amount demanded accomodates itself to the price that is fixed. ((213),p.31)

Robbins went on to illustrate the equivalent effects of fixing employment or wage targets. Higher employment and fixed wages could be compatible only under special conditions,i.e. an elasticity of the demand for labour of "constant onlay order" or in Marshallian terms equal to unity.

In his article of 1930, Robbins refined his analysis of the rational choice of working effort through the determination of a relationship with the wage rate that would have been "of the highest practical importance". If an increase in the wage rate had always made the labourer work less, then there would have been important implications for fiscal policy regarding labour income and labour supply. To demonstrate that the usual assumption (theorized by Knight and Pigou) of an elasticity of demand for income always standing at less than one at all points was fallacious, Robbins assumed Jevons' negative relationship between income and its price in terms of effort. Then he derived the curve displayed in figure 4 which represents the usual balance of utility and disutility deriving from working activity.

FIG. 4



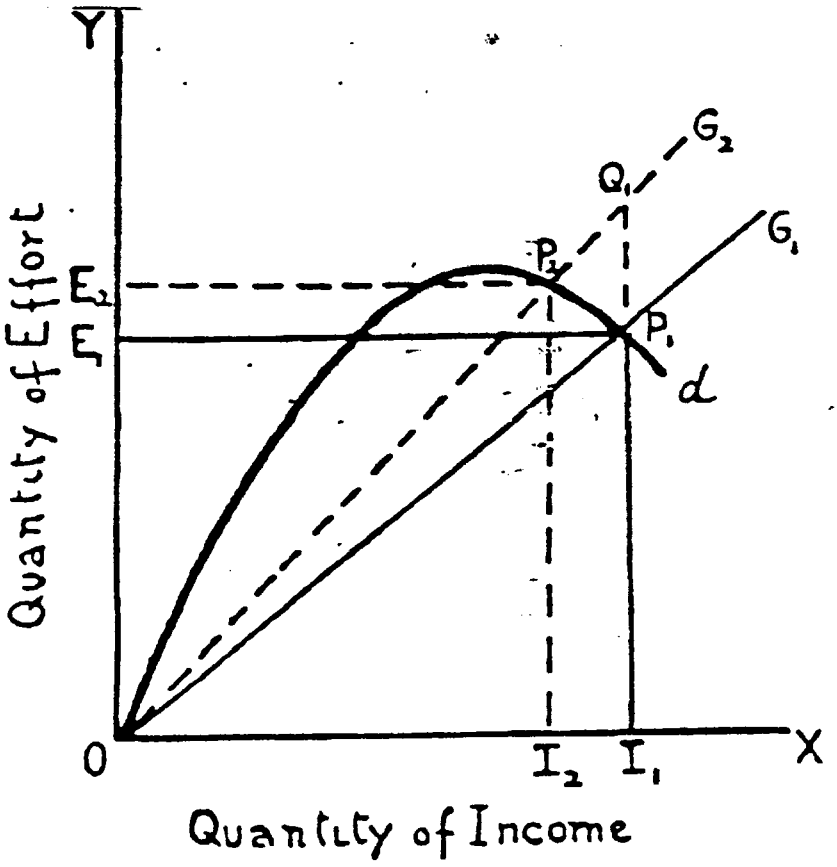
If the price of income in terms of effort is represented by a rectangular hyperbola (which means an elasticity of income to the effort price always equal to one) then when that price falls the total amount of efforts will also accordingly decline. But Robbins observed that nothing a priori can justify such a restrictive hypothesis. If the demand for income in terms of efforts shows some regions with an elasticity greater than one then the total amount of working time for any change in that price could increase as well. For this reason there is no easy fiscal policy to control the length of the working day. These deductions were also formalized , with the help of J.Hicks, who used (whether he knew it or not) the same expression as Jevons:

$$\frac{du}{dx} = \frac{du}{dy} \cdot \frac{dy}{dx}$$

where u is the utility of income, x is the amount of work done, and y is the amount of income received.

Robbins was also interested also in the old question regarding taxation and individual labour supply (or, in other words, whether or not higher tax on income discouraged "working effort") To explain the terms of the problem, Robbins firstly drew the famous backward bending curve (see figure 5)

FIG.5



where the curve Od is the pattern of labour effort calculated as a function of income (or of the hourly wage). Given the special shape of this curve, Robbins claimed that the usual assumption that the imposition of a tax will always make men work harder, was deprived of its theoretical basis.

The pitfall of such a reasoning was in the exact evaluation of "elasticity of demand for goods in terms of efforts". If the elasticity is not equal to one (that is to say indifference curves are not rectangular hyperbolas (a very special case!)) then every conclusion about taxation and labour supply is indeterminate. Therefore the only wayout of this dilemma would be an "inductive investigation of elasticities", because "the attempt to narrow the limit of possible elasticities by a priori reasoning must be held to have broken down" ((214), p.129)

One can conclude by remarking on the anticipatory nature of Robbins' conclusions. It has only been in the period since World War II that his suggestions have found their first empirical applications in Chicago's labour economics and that they have been further developed by the "rational expectations" theory.

1.11: F.Knight,P.Douglas and the Chicago school

A rigorous analytical treatment of the labour supply can be found in F.Knight's **Risk, Uncertainty and Profit** (142). His approach deserves attention because it represents in some ways the foundations of the modern interpretation of the problem. Knight's reasoning runs as follows: there exists in economic analysis the problem of understanding the rational behaviour which determines the offer of productive services. Services in fact differ from the ordinary commodities since, on the supply side, there is no physically existent amount of goods. One must therefore have a theory of these particular markets. **Labour supply is just one of these services**, since the seller must not sell all the quantity of labour-power he owns at the current market-price (at least if he is not in the generalized subsistence world of the Classical Economics). Then there is **a priori** no reason to suppose that the amount sold increases with the wage rate. In Knight's view:

> "Where the balance between wage earning and non-industrial uses of time is struck depends upon the shape of the curve of comparison between money and leisure (...) We therefore draw our momentary supply line in terms of price with some downward slope" ((142))

Within a reasoning in ordinal terms this is without doubt strictly logical because it refers only to the price of leisure and not to the specific disutility of work. Yet the author to support his conclusions, assumed that only a pure income effect exists. Leisure is a substitute for all the other commodities and when income increases the labourer can "buy back" a share of his own former working time. Knight also pointed out that:

> "(...) the expenditure of money also requires time and energy which must be saved from the work period if the best results are to be secured" ((142))

This implied the very important question of **consumption time**, which has come to be emphasized only recently through precise formulations within the **new theory of consumption**, (Becker (11), Lancaster (145), etc.)

However the particular attention given to income effects was misleading as L.Robbins was to demonstrate (214). Knight also arrived at doubtful conclusions, by using the hypothesis of an inverted slope of the supply curve of labour, to explain productive failures of underdeveloped countries. As a matter of fact such reasoning has often been advanced to justify low wage policies to counterbalance the "natural" propensity toward leisure. There are nevertheless many other interesting observations in the writings of this author. He discussed the Malthusian theory of overpopulation and he made his own attempt to refute it. He firstly noted (by enlarging the Marshallian approach) that there were several reasons to suppose that the "lower" strata of society did not produce children without economic calculation and he further underlined the role of the family.

> "The age of marriage and the size of family depend much more on the amount of economic gain or loss between prospective earning of children and the cost of their keep while under their parents control than they do upon calculation as to the possibility of maintaining standard of living conditions from one generation to another"((142), p.153)

In order to introduce his concept of the standard of living, Knight reminded us that historical events had shown that the increase in population had not kept pace with production and that per-capita income rose so much because the minimum standard of living also grew at the same time. Knight furthermore underlined another important factor influencing labour supply: **human capital investment**

> "Now training which results in increased productive efficiency, is evidently similar to a material productive agency or capital good created by diversion of resources from present consumptive uses. Even the population itself, as observed above, depends to a large extent upon considerations of pecuniary profit in the case of social classes which subsist mainly by labour. The distinction between labour and capital thus shows a tendency to fade away." ((142), p.158)

In summary one can say that Knight did not propose radically new concepts regarding labour market theories. Nevertheless he further reordered former vague concepts and drew attention to new features of a rapidly changing world of labour.

Knight's contribution is also particularly important in the methodological field. He was one of the founders of the "Chicago school", which represented without doubt the intellectual centre where modern labour supply theories flourished abundantly.

Knight's approach draws fine distinctions between economic utilitarian philosophies. The strong **libertarian** or **liberal** beliefs of this author lead him to constantly emphasize the central role of the autonomous individual's decisions. The aim of economics (and labour economics in this case) was to recognize the means to satisfy the human desire for freedom. But **"to live is to choose freely"**, as Knight's famous sentence says. Therefore the worker as any other economic agent must be judged as an individual who is capable of rational and efficient choices (where efficient means susceptible to giving maximum satisfaction, given the maximum freedom to choose that is possible). As J.McKinney (176) points out, Knight's methodology inverted the usual dictum that "there is no disputing about tastes". Economic activity of the present and the future world is concerned only with tastes.

Labour economics is therefore a field where Knight's approach can consequently be applied. In particular the U.S. is a country where such a specific interest was motivated by important socio-economical phenomena like high mobility of labour, immigration, quick changes of job and profession and dramatic substitutive processes in labour and capital investment because of technical progress. Thus it is understandable that such an idea of workers "free as Crusoe was free", was not considered so absurd as it is in many other Western countries where Classical and Marxist traditions exercise their deep influence. Knight and the Chicago school after him have been usually reputed to be "conservativist"-minded. In particular, their opinions about unionism have been strongly criticized. This is probably not fair or at least not correct, and certainly misleading. As the foregoing notes have shown, the emphasis on deeply differentiated individual economic behaviour has a very recent origin. The idea of "natural laws" or homogeneous mass behaviour is on the other hand much more older. The same concept of full employment is older than that of **quality and quantity** of labour services. The idea that workers are (at least partly) free to bargain their labour supply can be judged "capitalist oriented" (because of the noted imbalance in bargaining strength between the capitalist and the individual worker). But from the **normative**

viewpoint the idea belongs also to the libertarian-socialist (non-Marxist) tradition

Labour economists generally acknoledge the determinant role that the Chicago University professor P.H.Douglas had in starting empirical research on the labour market and the labour supply in particular. Prof. Douglas' **Theory of Wages** is the empirical complement of theoretical neoclassical labour economics of those years. As a matter of fact this was the first extensive attempt to verify by means of a quantitative approach, the existence of the backward-bending curve of labour supply among other issues. This curve, in Douglas's approach, referred to the short-run dynamics, while the long-run labour supply referred to demographic trends. But Douglas also emphasized the importance of a correct choice of dimensions in specification of economic variables. He enunciated the problem in all its simple clarity:

> "The supply of labour may differ very appreciably between two countries which have equal populations and identical age distributions (...); because two countries have equal population it does not follow that they have equal supplies of labour" ((57),p.269)

Labour supply in fact might differ because of different conditions concerning participation rates, social attitude toward working effort, the practice of absenteeism, the response to incentives etc. This author pointed out the fundamental difference between Classical and Neoclassical thought as follows:

> "The supply of labour is not, therefore, as most classical economists have conceived it, identical with the **stock** of labour available, but may vary quite widely as between two otherwise identical populations. It follows, therefore, that changes in the rate of remuneration may affect the quantity of labour which offers itself at any one time, since each of the three variables enunciated above may fluctuate with variations in the rate of wages" ((57),p.269)

Douglas was thus led to emphasize the Mercantilist contribution to labour market analysis and in his **Theory of Wages** he offered also a clear historical reconstruction of the origins of the concept of individual labour supply from Mercantilism up to the recent contributions of Robbins ,Pigou and Knight. In conclusion Douglas tried, by adopting a positivistic approach to discriminate among the different theories by means of the mathematical calculus of the elasticity of labour to hourly earning, and he stressed, that according to his point of view:

> "(...) the inductive, statistical, and quasi-mathematical method must be useful if we are ever to make economics a truly fruitful and progressive science" ((57), p. XII)

Douglas further specified that:

> "(...) one can only agree heartily with Professor Robbins when he declares that 'any attempt to predict the effect of a change in the terms on which income is earned must proceed by inductive investigation of elasticities'" ((57),p.301)

But Douglas made an important distinction about empirical methodology:

> "Instead however of directly measuring elasticities in the terms of effort, as professor Robbins seems to advocate, we shall directly measure the elasticities of supply as indicated by the responsiveness of hours of work to hourly earnings and then from these proceed backwards to obtain the probable elasticities of demand for income"((57), p.301)

This research program took into account data of several industrial groups in several parts of the U.S. and the principal conclusions of these studies can be resumed as follows.

First of all there was evidence of a negative relationship between two variables: **wages and hours of work.** An increase of one per cent in hourly wages would have caused a decrease of from one-fourth to one-third of one per cent in the quantity of labour offered and the inverse was also true.

Secondly, when only the hours of employed workers were considered then the elasticity of income in terms of effort increases (in absolute value) to 0.8-0.9.

Thirdly, when hours were combined with the employment rate, the elasticity became a little lower.

In conclusion Douglas thought that:

> "Knight therefore seem(ed) to have been correct in his general interpretation of what would happen if incomes were increased. (...) The workers in the United States tend to divide an increase in hourly wage rates into two parts. The first is a higher material standard of living while the second is increased leisure for themselves or their families. Approximately two-thirds to three-quarters of gain is devoted to the first and approximately one-third to one-quarter to the second of these purposes."((57), p.314)

In Douglas' works we find widespread sociological interests which became typical of the Chicago school's intellectual tradition. He, for instance, enlarged his empirical investigations to the field of labour relations trying by means of a positivist approach to rationalize new phenomena like absenteeism, moonlighting , and the diffusion of incentives in labour contracts. Furthermore his study (edited with E.Schoemberg (228)) anticipated some present empirical studies about urban and labour economics.

If we are to describe Knight and Douglas' thought a few words must also be said about the more recent results of Jevons' intellectual revolution concerning the labour market. We have seen that the ideas of the English economist have been filtered and systemized by several economists. The utilitarian approach has been progressively absorbed by American culture and, for as concerns individual labour supply in particular, by the Chicago university.

From the viewpoint of modern economic theory the worker is no longer seen as an indifferentiated member of a social class, which is subjugated by historical determinants to a hopeless subsistence status and to authoritarian labour relations. Modern workers are seen as individuals with freedom to choose and to exchange their services on the market. In this way social welfare acquired its own meaning. Social welfare was the welfare of consumers. For this reason the fundamental economic problem was partly shifted from income distribution to market functioning.

Income distribution involved historical issues; market exchange only involved efficiency problems. In this sense the approach of Knight in particular and the Chicago School in general, can be considered conservativist. The focus is on the market. Every distortion caused by monopolist interferences naturally leads, within this ultra-rationalistic vision, to sub-optimal solutions. But this is precisely the weak-point of the neo-libertarian approach to the labour market. There are no other normative suggestions arising out of pure neoclassical theory than searching for free competition. The existence of unions, social institutions, etc., which govern the exchange in the labour market could not (at least until very recent contributions) be explained on the same rational basis.

The neo-libertarian approach however opened the way to a wide application of quantitative methods to analyse many social phenomena. Undoubtedly the next step forward in this direction after Knight and Douglas' works, has to be ascribed to H.G.Lewis.(See A.Rees (207) In the immediate aftermath of World War II Lewis began to treat in neoclassical terms, topics which traditionally pertained to institutionalist economics. He was particularly concerned with trade-unionism, taxation and the two aspects of labour supply: participation and working hours. The Chicago School thus arrived at its present maturity and under Lewis' supervision many labour economists began, by means of an empirical methodology, to study all those puzzling features of individual labour supply already superficially examined by the economists of the past. G.Becker, W.Oi, M.Koster, R.Gronau, S.Rottemberg, J.Mincer and many others have stressed the importance of household composition in determining participation and working burdens, the economic nature of time allocation, the economic determinants of fertility, etc.

The Neoclassical approach to labour supply (besides its ideological implications) thus revealed itself to be an unchallenged and unrivalled methodology which has easily embodied more and more complexities regarding human behaviour.

FIRST PART: REFERENCES.

(1) Abel W.
"Congiuntura agraria e crisi agrarie",
Einaudi, Torino, (1976)

(2) Allen R.G.D.,
"Macro-economic Theory",
MacMillan,New York, (1968)

(3) Akerloff G.
"The Case Against Conservative Macroeconomics:an inaugural lecture",
Economica, Vol.46, (1979), p.219

(4) ————————
"A Theory of Social Custom of Which Unemployment May Be One Consequence",
Quarterly Journal of Economics, Vol.90., (1980), p.749.

(5) Arrow K.
"The Future and the Present in Economic Life"
Economic Enquiry, Vol.16, (1978), p.157

(6) Aufhauser R.K.
"Slavery and Scientific Management",
Journal of Economic History, Vol.33, (1973), p.811

(7) ————————
"Slavery and Technological Change",
Journal of Economic History, Vol.34, (1974), p.36

(8) Baack.,
"The Enclosure Movement and the Supply of Labour",
Journal of European Economic History, Vol.3, (1974),
p.172

(9) Bailay P.,
"Leisure and Class in Victorian England (1830-1885)"
Routledge & Kegan Paul, London, (1978)

(10) Barro R.-Grossman H.I.,
"Suppressed Inflation and Supply Multiplier",
Review of Economic Studies, Vol.41, (1974), p.87

(11) Becker G.,
"A Theory of Allocation of Time",
Economic Journal, Vol.LXXX, (1965), pag 493

(12) ————————,
"A Theory of Social Interactions",
Journal of Political Economy, Vol.82, (1974), p.1066.

(13) ———,
"Irrational Behaviour and Economic Theory",
Journal of Political Economy, Vol.70, (1962), p.1

(14) Bengstrom T.,
"On the Existence and Optimality of Competitive Equilibrium for a Slave Economy",
Review of Economic Studies, Vol.38, (1971), p.23

(15) Berg E.J.,
"Backward-Sloping Supply Functions in Dual Economics:the African case",
Quarterly Journal of Economics, Vol.75, (1961),

(16) Bevedrige W.H.,
"Unemployment: a problem of industry",
AMS Press, (1978).

(17) ———————,
"Full-Employment in Free Society",
G.Allen Ltd. London (1967).

(18) Bienefeld M.A.,
"Working Hours in British Industry: an economic history",
L.S.E., London, (1972)

(19) Bladen V.,
"From Adam Smith to Maynard Keynes: the heritage of political economy",
University of Toronto Press, Toronto, (1974).

(20) Blaug M.,
"Economic Theory in Retrospect",
Homewood Ill., R.D.Irwin Inc., (1958).

(21) Bloch M.,
"Sviluppo delle istituzioni signorili e coltivatori dipendenti".
in "Storia economica di Cambridge", Vol.I, Einaudi, Torino, (1976).

(22) ———,
"Comment et pourqoui finit l'eslavage antique",
Annales d'histoire social, Vol.2 (1947), p.30

(23) Boulding K.
"Economic Analysis"
Harper & Row, New York, (1966)

(24) Bowley M.,
"Studies in the History of Economic Theory before 1870",
MacMillan, London, (1973).

(25) Brack J.-Cowling K.,
"Advertising and Labour Supply: workweek and workyear in U.S. manufacturing industries (1919-76)",
Kyklos, Vol.36, (1983), p.285.

(26) Brigh Bill C.K.,
"Man and Leisure",
Englwood Cliffs, N.J. Prentice Hall, (1961)

(27) Brownlee W.E.,
"Household Values, Women's Work, and Economic Growth,(1800-1930)",
Journal of Economic History, Vol.XXXIX,(1979), p.199

(28) Buchanan J.,
"Frank H. Knight",
International Journal of Social Science, Vol.8, (1956), p.424

(29) Buck P.W,
"The Politics of Mercantilism",
H.Holt, New York,(1942)

(30) Bury J.B.,
"The Idea of Progress",
Dover, New York,(1955)

(31) Cairnes J.E.,
"The Slave Power",
Harper & Row. New York, (1968)

(32) Canarella G.-Tomaske J.,
"The Optimal Utilization of Slave",
Journal of Economic History, Vol.35, (1975), p.621

(33) Carcopino J.,
"La vita quotidiana a Roma, all' apogeo dell' impero"
Editori Laterza, Bari, (1976)

(34) Ciccotti E.,
"Il tramonto della schiavitu' nel mondo antico".
Laterza,Bari, (1977), edizione originale: Torino (1899)

(35) Cipolla C.M.
"Storia economica dell'Europa pre-industriale"
Il Mulino, Bologna,(1974)

(36) Chalk A.F.,
"Natural Law and the Rise of Economic Individualism in England",
Journal of Political Economy, Vol. 33, (1966), p.330

(37) Chambers J.D.,
"Enclosure and Labour Supply",
Economic History Review, Vol.5, (1953), pag 319.

(38) Chapman S.J.,
"Hours of Labour",
Economic Journal, Vol.XXIX, (1909), p.353

(39) Child J.,
"A New Discourse of Trade",
R & Foulis, Glasgow, (1751)

(40) Church R.A.
"Labour Supply and Innovation (1800-1860)
Business History,Vol.XII,(1970),p.33

(41) Clark C.-Haswell M.,
"The Economic of Subsistence Agriculture",
MacMillan, London, (1970)

(42) Coats A.W.,
"Changing Attitudes to Labour in the Mid-Eighteenth Century",
Economic History Review, Vol. 11, (1958), p.46

(43) ----------,
"The Interpretation of Mercantilist Economics: Some Historiographical Problems",
History of Political Economy, Vol.5, (1973),p.485

(44) Coleman D.C.,
"Labour in the English Economy of the Seventeenth Century",
Economic History Review, Vol.8, (1955), p.280

(45) Collison Black R.D.,
"Jevons and Cairnes",
Economica, Vol.27, (1960) p.232

(46) Columella Junius Moderatus L.,
"De Re Rustica",
in: "Les agronomes latins, Caton,Varron,Columella, Palladius", Dubochet, Le Chevalier, Paris, (1849)

(47) Comish A.,
"Capacity to Consume",
American Economic Review, Vol.26, (1936), p.293

(48) Conrad A.H.-Mayer J.R.,
"The Economics of Slavery in the Ante-Bellum South",
Journal of Political Economy, Vol.LXVI, (1958), p.95

(49) Crafts N.F.R,
"Enclosure and Labour Supply Revisited",
Explorations in Economic History, Vol.15, (1978), p.172.

(50) Davenport H.J.,
"The Economics of Alfred Marshall",
A.M.Kelley, New York, (1965)

(51) David P.-Temin P.,
"Slavery: the progressive institution?",
Journal of Economic History, Vol.34, (1974) p.739

(52) Debenest J.,
"Le temo de consommation variable macroeconomique?"
Revue economique

(53) DeGrazia S.,
"Of Time, Work and Leisure",
The Twentienth Century Fund, New York, (1962)

(54) DeMaddalena A.,
"Rural Europe, 1500-1750"
in "Fontana Economic History of Europe"
Vol.2, Fontana Books, Glasgow, (1979)

(55) Denison E.F.,
"The Sources of Economic Growth and the Alternatives before U.S."
Supplementary Paper n.13, New York Commitee for Economic Developement
(1962).

(56) Doehard R.,
"The Early Middle Ages in the West"
North-Holland,Amsterdam,(1978)

(57) Douglas P.H.,
"The Theory of Wages",
reprint by A.M.Kelley, New York, (1964)

(58) Duby G.,
"The Early Growth of the European Economy"
Weindenfeld & Nicolson, London, (1974)

(59) Dumazedier J.,
"Toward a Society of Leisure",
The Free Press, (1967).

(60) Dumazedier J.-Latouche N.,
"Work and Leisure in French Society",
Industrial Relation, Vol.2, (1962)

(61) Einaudi L."
"Chi vuole la liberta'"
Corriere della Sera, 13 aprile 1948

(62) Elliott J.H.,
"Europe Divided"
Fontana Books, Glasgow, (1978)

(63) Etgar M.,
"The Household as Production Unit",
in "Research in Marketing", edited by J.N.Sheth Greenwhich,
CN; JAI Press, Inc. p.79

(64) Ekelund R.B.-Hebert R.F.,
"A History of Economic Theory and Method",
MacGraw Hill, (1975)

(65) Engels F.,
"The Conditions of the Working Class in England in 1844",
Stanford University Press, (1968)

(66) ————,
"The Origin of the Family, Private Property and the State",
in K. Marx and F. Engels "Selected Works", Lawrence & Wishart, London (1950)

(67) Feldman L.-Hornik J.,
"The Use of Time: an integrated conceptual model",
Journal of Consumer Research,Vol.7, (1981), p.407

(68) Fender J.,
"Understanding Keynes"
Wheatsheat Books, Brighton, Sussex, (1981)

(69) Ferber M.A.,
"A Note on Household Production: An Improvement of the Record"
Review of Income and Wealth, Vol.21, (1975), p.251.

(70) Ferber M.A.-Birnbaum B.G.,
"The New Home Economics: retrospects and prospects",
Journal of Consumer Research, Vol.4,(1981), p.19

(71) Fields R.H.
"Lord Keynes' Theory of Wages"
Economic Record, Vol. , (1948), p.284

(72) Fisher I.,
"The Nature of Capital and Income",
Reprints by A.M.Kelley, (1965)

(73) ————,
"Elementary Principles of Economics",
MacMillan, New York, (1912)

(74) Fisk G.,
"Leisure Spending-Behaviour",
University of Pennsylvania Press, Philadelphia, (1963)

(75) Fletcher R.,
"John Stuart Mill"
T.Nelson and sons, London, (1973)

(76) Florence P.S,
"Economics of Fatigue and Unrest, and the Efficiency of Labour in British and American Industry",
G.Allen & Unwin, London, (1924)

(77) Flinn M.,
"Proceedings of the Seventh International Economic History Congress", Theme B3, Edinburgh University Press, Edinbourgh,(1978)

Nineteenth Century City",
Explorations in Economic History, Vol.16, (1979), p.111

(103) Grossbard-Shechtman A.
"Gary Becker's Theory of the Family: some interdisciplinary considerations"
Sociology and Social Research, Vol.66, (1983), p.1

(104) Hall R.E.,
"Labour Supply and Aggregate Fluctuations"
Canegie-Rochester Conference, Series on Public Policy, (1980),p.7

(105) Harris J.,
"Unemployment and Politics:a study in English social policy, (1886-1914)",
Clarendon Press, Oxford, (1972)

(106) Harris M.-Raviv A.,
"Some results on incentive contracts"
American Economic Review,Vol.68, (1978), p.20

(107) Harrod R.F.,
"Notes on Supply",
Economic Journal, Vol.XL, (1930), p.232

(108) Hawes D.K.,
"Time Budgets and Consumer Leisure Time Behaviour",
in "Advances in Consumer Research", Vol.4, edited by W. Perrault Jr., Association for Consumer Research. (1977)

(109) Hawtrey R.G.,
"Keynes and Supply Functions"
Economic Journal, Vol.64, (1954), p.834

(110) Heckscher E.,
"Mercantilism",
G. Allen and Unwin, London (1934)

(111) Hendrix P.-Kinner T.C.-Taylor R.,
"The Allocation of Time by Consumers"
in "Advances in Consumer Research", Vol.6, edited by W.L.Wilkie, A.Arbor, MI Association Consumer Research, (1979)

(112) Hess J.D.,
"The Terms of Authority"
Journal of Economic Behaviour and Organization, Vol.2, (1981), p.237

(113) Hewett W.W,
"Professor I. Fisher on Income, in the Light of Experience".
American Economic Review, Vol.19, (1929), p.217

(114) Hill C.,

"Puritans and Poor",
Past & Present, n.4, (1952), p.217

(115) Hicks J.R.,
"Value and Capital",
Oxford University Press, London, (1946)

(116) ————,
"Classics and Moderns",
Basil Blakwell, London, (1983)

(117) Himmelweit S.-Mohun S.,
"Domestic Labour and Capital",
Cambridge Journal of Economics, Vol.1, (1977), p. 15

(118) Hirsh E.-Hirsh B.,
"The Eterodox Methodology of Two Chicago Economists",
Journal of Economic Issues, Vol.IX, (1975), p.645

(119) Hobson J.A.,
"The Evolution of Modern Capitalism",
W. Scott Ltd, London (1894)

(120) ————,
"The Meaning and Measure of Unemployment"
Contemporary Review, Vol.67, (1895),p.415

(121) ————,
"The Economic Cause of Unemployment",
Contemporary Review, Vol. 67, (1895), p.744

(122) ————,
"The Industrial System,"
W.Scott.Ldt. London (1895)

(123) Hollander S.,
"The Economics of D.Ricardo"
University of Toronto Press, Toronto,(1979)

(124) Holmes J.M.,
"The Keynesian Aggregate Supply Function for Labour",
Journal of the American Statical Association, Vol.67, (1972), p.797

(125) Holub H.W.- Reich V.P.-Sonntag P.
"Labour-consumption accounting: a
suggestion for a household-oriented
national accounting system"
Quality and Quantity, Vol.15, (1981), p.111

(126) Homze E.L.,
"Foreign Labour in Nazi Germany",
Princeton University Press, Princeton, (1967)

(127) Hopkins E.,

"Working Hours and Conditions During the Industrial Revolution: a re-appraisal",
Economic History Review, Vol.35, (1982), p.52

(128) Howard D.H.,
"A Disequilibrium Model in a Controlled Economy",
D.C. Heath and Company, (1979)

(129) Huang Y.,
"Backward-bending Curve and Behaviour of Subsistence Farmers",
Journal of Development Studies, Vol.12, (1976), p.191

(130) Hutchinson T.W.
"On Revolution and Progress in Economic Knowledge"
Cambridge University Press, Cambridge, (1978).

(131) Jacob W.
"Report on the Trade in Corn and Agriculture in the North of Europe"
London,(1826),p.63

(132) Jacoby J.-Szybillo G.J.-Berning C.K.,
"Time and Consumer Behaviour: an interdisciplinary overview",
Journal of Development Studies, Vol.2, (1976), p.320

(133) Jennings R.,
"Natural Elements of Political Economy",
Longman, Brown Green, London, (1855),reprinted by A.M.Kelley, New York,(1969)

(134) Jevons W.S.,
"Principles of Political Economy"
A.M.Kelley, New York.

(135) Johnson E.A.J.,
"Predecessors of Adam Smith",
A.M.Kelley, New York, (1965)

(136) Katona G.,
"The Mass Consumption Society",
Mac Graw-Hill Books Co.,New York, (1964)

(137) Kelley J.R.,
"Work and Leisure: a simplified paradigm",
Journal of Leisure Research, Vol.4, (1972), p.50

(138) Keynes J.M.,
"The General Theory",
MacMillan, London, (1976)

(139) ————
"Collected Works"
Macmillan, London, (1972)

(140) Kerr G.

"The Shortening Workweek as a Component of Economic Growth",
American Economic Review, Vol.46, (1955), Papers and Proceedings

(141) Knight F.H.,
"Economic Psychology and the Value Problem",
A.M.Kelley, New York, (1951)

(142) ————,
"Risk, Uncertainty and Profit",
Kelley & Millman, New York, (1957)

(143) Koestler A.
"The Sleepwalkers"
Penguin Books, New York, (1982)

(144) Krueger A.O.,
"The Implications of a Backward Bending Labour Supply Curve",
Review of Economic Studies, Vol.29, (1962), p.327

(145) Lancaster K.,
"The Theory of Household Behaviour: Some Foundations",
Annals of Economic and Social Measurement, Vol.4, (1975), p.1

(146) ————,
"A New Approach to Consumer Theory",
Journal of Political Economy, Vol.74,(1966), p.132

(147) Langer W.W,
"American Foods and Europe's Population Growth (1750-1850)",
Journal of Social History, (1975), p.51.

(148) ————,
"Infaticide: an Historical Survey",
in: T.McKeon, "The Modern Rise of Population",
E. Arnold Publisher Ldt, London, (1976).

(149) Lee L.C.-Ferber R.,
"Use of Time As a Determinant of Family Market Behaviour",
Journal of Business Research, Vol.5, (1977), p.75

(150) Lee J.J.,
"Labour in German industrialization",
in "The Cambridge Economic History of Europe"
Vol.VII,Cambridge University Press, Cambridge, (1978)

(151) Le Mahieu D.L.
"Malthus and the Theology of Scarcity"
Journal of the History of Ideas, Vol.XL, (1979), p.467

(152) Leontief W.W.,
"La distribuzione del lavoro e del reddito",
Le Scienze,n.171, (1982), p.148

(153) Lequin Y.,
"Labour in the French Economy since the Revolution"
in "The Cambridge Economic History of Europe"
Vol.VII,Cambridge University Press, Cambridge, (1978)

(154) Lesourne J.,
"A Theory of the Individual for the Economic Analysis"
North-Holland, Amsterdam, (1977)

(155) Levenson I.,
"Reductions in Hours of Work as a Source of Productivity Growth"
Review of Economics and Statistics, Vol.50, (1969),p.199

(156) Lewis W.A.,
"Reflections on Unlimited Labor",
Development Research Project, Discussion Paper n.5, Woodrow
Wilson School, Princeton University (1968)

(157) Linder S.B.,
"The Harried Leisure Class",
Columbia University Press, New York (1970)

(158) Linge G.J.R.
"Industrialization and the Household"
International Social Science Journal, Vol.XXXVI. (1984) p.319

(159) Lowe R.,
"Hours of Labour: Negotiating Industrial Legislation in
Britain, (1919-39)",
Economic History Review, Vol.35, (1982), p.254

(160) Lucas R.Jr,
"Understanding Business Cycles"
in: K.Brunner-A.Melzer:"Stabilization of the Domestic and
International Economy",Carnegie-Rochester Conference Series
in Public Policy, North-Holland, Amsterdam, (1977).

(161) Lucas R.-Rapping L.,
"Real Wages, Employment and Inflation",
Journal of Political Economy, Vol.77, (1969), p.721

(162) Lucas R.-Sargent T.J.,
"After Keynesian Macroeconomics"
Federal Reserve Bank of Boston Conference, Vol.19, Boston
(1977).

(163) Lutz M.
"Towards a more general economic theory of work."
International Social Science Journal", Vol.XXXII, (1980), p.505

(164) Maddison A.
"Economic Growth in Japan and the USSR"
G.Allen & Unwin Ltt, London, (1967)

(165) Malcomson R.W.,
"Life and Labour in England, (1700-1780)",
Hutchinson, London, (1981)

(166) Malthus T.R.,
"The Principles of Population",
Edited by A.Flew, Baltimore, Penguin Books, Inc. (1970)

(167) ----------.,
"The Principles of Political Economy",
A.M.Kelley, New York, (1961)

(168) Mancini O.-Perillo F,D.-Zagari E.,
"Teoria economica e pensiero corporativo",
ESI, (1979)

(169) Mandeville B.,
"The Fable of the Bees",
Edited by F.B.Kaye, Oxford University Press, (1924)

(170) Manly T.,
"Usury at Six Percent",
A.M.Kelley, New York.

(171) Marshall A.,
"Principles of Economics",
(1980), Reprint by Macmillam, London, (1961)

(172) Marhall A.-Marshall M.P.,
"Economia della produzione",
ISEDI, MIlano, (1975)

(173) Marx K.,
"Capital",
Lawrence & Wistart, London, (1977)

(174) McCormick B.,
"Hours of Work in British Industry",
Industrial and Labour Relations Review, Vol. XII, (1959),p.426

(175) McKeown T.,
"The Modern Rise of Population",
E. Arnold Publisher, Ltd, London, (1976)

(176) McKinney J.,
"F.Knight and the Chicago Libertarianism",
Journal of Economic Issues, Vol.IX, (1975), p.777

(177) McNulty P.J.,
"The Origins and Development of Labour Economics",
MIT Press, (1980)

(178) Michael R.T.-Becker G.S.,
"On the New Theory of Consumer Behaviour",
Swedish Journal of Economics, Vol.75, (1973), p.378.

(179) Michaelis-Schraepler,
"Decree by the Leader of the German Labour Front of 22 June 1933",
in: "Ursachen und Folgen" (Ed.Tr.), p. 642.

(180) Mill J.S.
"Principles of Political Economy"
(first edition 1848), People's Edition, Longmans, Green, (1876)

(181) Miller H.L.Jr.,
"On the Chicago School of Economics",
Journal of Political Economy, Vol.70, (1962), p.64.

(182) Millward R.,
"An Economic Analysis of the Organization of Serfdom in Eastern Europe",
Journal of Economic History, Vol.XLII, (1983), p.513

(183) Mirrlees J.A.,
"The optimal structure incentives and authority within an organization",
The Bell Journal of Economics, Vol.7, (1976), p.105

(184) Moore G.H.-Hedges J.N.,
"Trends in Labor and Leisure",
Monthly Labor Review, (1971)

(185) Mondolfo R.,
"The Greek Attitude to Manual Labour",
Past & Present, n.6, (1954), p.1

(186) Morishima M.,
"Marx's Economics: a dual theory of value and growth",
Cambridge University Press, Cambridge, (1973)

(187) Nathan O.,
"The Nazi Economic System",
Russel & Russel, New York, (1972)

(188) Nordhaus W.D. - Tobin J.
"Is growth obsolete?"
inEconomic Research: Retrospect and Prospect.
Economic Growth, 50 th. Anniversary Colloq.
V, NBER. New York: National Bureau for Economic
Research. (1972), p.1

(189) North D.C.,
"Structure and Change in Economic History"
W.W.Norton & Company, Inc., New York, (1981)

(190) Ogg D.,
"Europe of the Ancient Regime"
Fintana Books, Glasgow, (1972)

(191) Ohkawa K.-Minami R.,
"The Phase of Unlimited Supplies of Labour"
Hototsubashi Journal of Economics, Vol.5, (1964), p.1

(192) Owen J.,
"Working Hours",
Lexington Books, (1977)

(193) -------,
"The Demand for Leisure",
Journal of Political Economy, Vol.79, (1970), p.1

(194) Paish F.W.,
"Economic Incentive in Wartime",
Economica, Vol.8 (1941), p.239

(195) Paget J.,
"Hungary and Transilvania"
2 Vols., London, (1839), p.305

(196) Parker W.N.,
"Slavery and Southern Economic Development: An Hypothesis and Some Evidence",
Agriculture History, Vol.44, (1970), p.115.

(197) Parson S.,
"The Standard of Living of the Working class during the Industrial Revolution with special reference to Devon",
M.A. Dissertation, University of Exeter, (1978)

(198) Paul E.F.
"W.Stanley Jevons: Economic Revolutionary, Political Utilitarian"
Journal of the History of Ideas, Vol.XL, (1979), p.267

(199) Pauling N.G.,
"The Employment Problem in Pre-Classical Economic Thought",
The Economic Record, Vol.XXVII, (1951)

(200) Perelman M.,
"Classical Political Economy"
Rowman & Allanheld, Totowa, N.J., (1984)

(201) Pigou A.C.,
"The Economics of Welfare",
MacMillan, London (1932)

(202) ----------,
"The Theory of Unemployment",
F. Cass & Co. Ltd, London (1968)

(203) ----------,
"Mr. J.M.Keynes' 'General Theory of Employment, Interest and Money'",
Economica, Vol.3, (1936), p.115

(204) Plinius Secundus C.,
"Naturali Historiae",
Einaudi, Torino, (1984)

(205) Pollard S.,
"Labour in Great Britain",
in "The Cambridge Economic History of Europe"
Vol.VII,Cambridge University Press, Cambridge, (1978)

(206) Probesusky G.A.,
"The Concept of Leisure in the URSS",
Industrial Relations, Vol.2, (1962)

(207) Rees A.,
"H.Gregg Lewis and the Development of Analytical Labor Economics"
Journal of Political Economy, Vol.IX, (1974),p.279

(208) Ricardo D.,
"The Principles of Political Economy and Taxation",
Dent & Sons, London (1973)

(209) ————.,
"The Works and Corrispondence of David Ricardo",
Edited by P. Sraffa with the collaboration of M. Dobb,
Cambridge University Press, Cambridge, (1951-1955)

(210) Rich E.E.,
"Gli insediamenti coloniali e i problemi della manodopera",
in "Storia Economica di Cambridge",
Vol.4, Einaudi, Torino, (1975)

(211) Ricossa S.,
"Dai perfettisti ci salvi Iddio",
Il Sole-24 ore, n.86, (11.4.1984),p.7

(212) Rima Irgrid.
"Whatever Happened to the Concept of Involuntary Unemployment?"
International Journal of Social Economies
Vol.III (1984), p.62

(213) Robbins L.,
"The Economic Effects of Variations of the Hours of Labour",
Economic Journal, Vol.XXXIX, (1929), p.25

(214) ————.,
"On the Elasticity of Demand for Income in Terms of Efforts",
Economica, Vol.10, (1930), p.123

(215) ————,
"The Theory of Economic Policy in English Classical Political Economy",
MacMillan, London (1968)

(216) ————.,

"An Essay on the Nature and Significance of Economic Science"
MacMillan, London, (1945)

(217) Robertson D.H.,
"Economic Incentives",
Economica, Vol.1, (1921)

(218) Roger Mols B.L.,
"Population in Europe: 1500-1700",
in "Fontana Economic History of Europe", Vol.2, (1974)

(219) Rogin L.,
"The Meaning and Validity of Economic Theory",
Harper & Brothers, New York, (1956)

(220) Roll E.,
"A History of Economic Thought",
Faber & Faber, London, (1966)

(221) Rottemberg S.,
"Income and Leisure in an Underdeveloped Economy",
Journal of Politcal Economy, Vol.LX, (1952), p.95

(222) Russel J.C.,
"Population in Europe: 500-1500",
in "Fontana Economic History of Europe", Vol.1, (1972)

(223) Russel R.R.,
"The General Effects of Slavery upon Southern Economic Progress",
Journal of Southern History, Vol.4, (1938), p.34.

(224) Saito O.,
"Labour Supply Behaviour of the Poor in the English Industrial Revolution"
Journal of European Economic History, Vol.10, (1981), p.633.

(225) ————,
"Occupational Structure, Wages and Age Patterns of Female Labour Force Partecipation in England and Wales in the Nineteenth Century",
Kejo Economic Studies, Vol. XVI, (1979), p.17

(226) Samuelson P.A.,
"Economists and the History of Ideas",
American Economic Review, Vol.52, (1962), p.12

(227) Saraydar E.,
"A Note on the Profitability of Ante Bellum Slavery",
Southern Economic Journal, Vol.30, (1964), p.325.

(228) Schmitz M.D-Schaefer D.F.,
"Slavery, Freedom and the Elasticity of Substitution",
Explorations in Economic History, Vol.15, (1978), p.137.

(229) Schoenberg E.-Douglas P.H.,
"Studies in Supply Curve of Labour: the Relation between Average Earnings in American Cities and the Proportion Seeking Employment",
Journal of Political Economy, Vol.45, (1937), p.45

(230) Schumpeter J.A.,
"History of Economic Analysis",
Oxford University Press (1954)

(231) Schwartz L.D.,
"Conditions of life and work in London, c. 1770-1820, with special reference to East London",
D.Phil. Dissertation, University of Oxford, (1976).

(232) Seligman B.B.,
"The Impact of Positivism on Economic Thought",
History of Political Economy, Vol.1, (1969), p.256.

(233) Shapiro L.-Godson J.,
"The Soviet Worker: Illusions and Realities",
MacMillan (1977)

(234) Sheffrin S.M.,
"Rational Expectations"
Cambridge University Press, Cambridge, (1983).

(235) Shergold P.R.,
"The standard of life manual workers in the first decade of the 20 th. century: a comparative study of Birmingham, UK. and Pittsburg, U.S.A.",
Ph.D.Dissertation, University of London, (1976).

(236) Simon H.,
"A Formal Theory of the Employment Contract",
in: H.Simon ed., "Models of Man", Wiley, New York, (1957)

(237) Smith A.,
"Lectures",
edited by E.Cannan, Clarendon, Oxford (1896)

(238) ———,
"Theory of Moral Sentiments",
A.M.Kelley, New York, (1966)

(239) ———,
"The Wealth of Nations",
Random House, New York, (1937)

(240) Smith E.D.,
"Labour Supply and Labour Effort"
AER, Vol.15 (1925), p.101

(241) Solzenicyn A.,

"Archipelago Gulag",
Mondadori (1974)

(242) Solow R.,
"On Theories of Unemployment",
American Economic Review, Vol.70, (1980), p.1

(243) Solow R.-Temin P.,
"The Inputs for Economic Growth",
in "The Cambridge Economic History of Europe"
Vol.VII,Cambridge University Press, Cambridge, (1978)

(244) Soule G.,
"The Economic of Leisure"
Annals of the American Academy of Political and Social Science), Vol.313, (1957),p.16

(245) Starobin R.,
"Industrial Slavery in the Old South",
Oxford University Press, New York, (1970).

(246) Stoyle J.,
"Europe Unfolding"
Fontana Books, Glasgow, (1969)

(247) Stigler G.J.,
"The Early History of Empirical Studies of Consumer Behaviour",
Journal of Political Economy, Vol.62,(1954), p.95

(248) Sutch R.,
"The Profitability of Ante Bellum Slavery-Revisited",
Southern Economic Journal, Vol.31, (1965), p.365.

(249) Swianewicz S.,
"Forced Labour and Economic Development",
Oxford University Press, (1965)

(250) Szalai A.,
"The Use of Time",
Mantan, The Hague, Paris (1972)

(251) Tawney R.H.,
"Religion and Economic and the Rise of Capitalism",
Penguin Books, (1975).

(252) Terborgh G.W.,
"Psychic Income, Total Utility and Consumer Surplus",
American Economic Journal, Vol.18, (1928), pag75

(253) Thomas K.,
"Work and Leisure in Pre-Industrial Society",
Past & Present, n.29, (1964), p.50

(254) Thompson E.P.,

"Time, Work Discipline, and Industrial Capitalism",
Past & Present, Vol.38, (1967), p.56

(255) ----------,
"The Making of English Working Class.",
Vintage, New York, (1969)

(256) Thorold Rogers J.E.,
"Six Centuries of Work and Wages",
Swan Sonnenshein & Co., London (1909)

(257) Tilly L.A.,
"Individual Lives and Family Strategies in the French Proletariat",
Journal of Family History, Vol.4, (1979), p.137

(258) ----------,
"The Family Wage Economy of a French Textile City: Roubaix (1872-1906)",
Journal of Family History, Vol.4, (1979), p.381

(259) Tozzi G.,
"Economisti greci e romani"
Feltrinelli, Milano, (1961)

(260) Trever A.A.,
"A History of Greek Economic Thougth",
Chicago university Press, (1916), Reprinted by Porcupine Press (1978)

(261) Vanek J.,
"Time Spent in Housework",
Scientific American,Vol.231, (1973), p.116

(262) Varro Teretius M.,
"Res Rusticae"
Villasanta, Milano, (1930)

(263) Vernon H.M.,
"Industrial Fatigue and Efficiency",
G.Routledge & Sons, London, (1921)

(264) Viljoen S.,
"Economic Systems in World History"
Longman, London, (1974)

(265) Von Mises L.
"Human Action",
Contemporary Books Inc., Chicago.

(266) Von Wieser F.,
"Social Economics",
Reprints of A.M.Kelley, New York, (1967)

(267) Voss J.,

"The Definition of Leisure",
Journal of Economic Issues, Vol.1, (1967), p.91

(268) Yeo C.A.,
"The Economics of Roman and American Slavery",
Finanzarchiv (1952), p.445

(269) Young A.,
"Eastern Tours",
Vol.IV

(270) Wallace M.S.,
"A Backward Bending Supply of Labour Schedule and the Short-Run Phillips Curve",
Southern Economic Journal, Vol.48, (1981), p.502.

(271) Weber M.,
"The Protestant Ethic and the Spirit of Capitalism",
G.Allen & Unwin, Ltd, London

(272) Weinrobe M.,
"Household Production and National Production: An Improvement of Record",
Review of Income and Wealth, Vol.20, (1974), p.89

(273) Weston N.A.,
"Shorter Working Time and Unemployment",
American Economic Review, Vol.22, (1932), p.5.8

(274) Wharton C.R.Jr.,
"The Economic Meaning of Subsistence",
Malayan Economic Review, Vol.8, (1963)

(275) ————————,
"Subsistence Agriculture and Economic Development",
Aldine Publ. Co., Chicago (1969

(276) Whitaker J.K.,
"The Early Economic Writings of Alfred Marshall"
MacMillan, London, (1975)

(277) Wicksell K.,
"Valore, capitale e rendita"
ISEDI, Milano, (1976)

(278) Wicksell K.,
"Some Unpublished Works"
The ARNE RYDE SYMPOSIUM on theoretical contributions of K.WICKSELL, LUND, (September 1977).

(279) Wicksell K.
"Lectures on Political Economy"
A.M.Kelley, Fairfield, (1977).

(280) Wiles R.C.,

"The Theory of Wages in Later English Mercantilism",
Economic History Review, Vol.21, (1968), 113

(281) Wilson C.,
"The Other Face of Mercantilism",
Transactions of the Royal Historical Society, Vol.IX,
(1959),

(282) Williamson O.E.-Watcher M.L.-Harris J.E.,
"Understanding the employment relation: the analysis of idiosyncratic exchange",
The Bell Journal of Economics, Vol.6, (1975), p.250

(283) Woodman H.D.,
"The Profitability of Slavery",
Journal of Southern History, Vol.29, (1963), p.307

(284) Woody T.,
"Leisure in the Light of History",
Annals, American Academy of Political and Social Science,
Vol.313, (1957), p.5

(285) Wright G.,
"New and Old Views on the Economics of Slavery",
Journal of Economic History, Vol.33, (1973), p.452

(286) Zamagni V.,
"La dinamica dei salari nel settore industriale",
in "L'economia italiana durante il fascismo" a cura di P.L.Ciocca e G.Toniolo, Il Mulino, Bologna,(1979)

(287) Zuzaneck J.,
"Society of Leisure or the Harried Leisure Class? Leisure Trends in Industrial Societes",
Journal of Leisure Research, Vol.6, (1974), p. 293

SECOND PART: CHAPTER I

EMPIRICAL STUDIES OF INDIVIDUAL LABOUR SUPPLY

1.1 Introduction

Before examining the development of empirical research on individual labour supply by means of neoclassical allocative models, it is necessary to mention some preliminary issues relating to the definition of labour supply. These problems are much more important than they are commonly assumed to be.

Labour is usually measured in units of time; it is therefore dimensionally a flow, given by the product L = N*h*n (where N is the number of employed men; h are the hours of work; n is the intensity of labour). During a certain period therefore, the total amount of labour depends upon three different kinds of economic or social determinants:

i) the number of men available on the labour market (that is to say, the resulting balance of two opposite flows: that of the new entrants to the labour market and that of those workers who leave it plus the stable labour force).

ii) the duration of the working activity of each worker, (namely the number of working weeks and the length of working day).

iii) the intensity of work which depends upon labour organization and labour relations.

Both the labour supply and demand for labour of the economic agents are taken into account in these three dimensions, but labour economics very often has over-simplified the question by referring to the first item only. From the supply side, the offer of labour has been seen as the product of participation rate by the number of able bodied men.

Given an exogenously pre-determined population, the problem was thus reduced to a study of a function of its participation rate. But this could only be reasonable in a few special cases:

i) when duration and intensity are constant and equal for everyone. In fact in this case the decision for a new worker who enters the market is of the "take-it-or-leave-it" kind (the economic jargon calls it "corner solutions") (NOTE 1)

ii) when there is perfect flexibility of hours (as in the canonical neoclassical scheme). If a worker is free to sell all of his disposable time, then the dichotomy between participation and quantity decisions disappears. But in such an ideal world employment and unemployment rates would lose their usual meaning. In other words these two aggregates could not be measured by means of the number of men who work or look for a job, but by measuring the effective amount of labour services that the economy utilizes or wastes.

Modern industrial societies have created a very confused situation from this point of view. Regulation and segmentation of the labour market, are blended with elements of flexibility (part-time, overtime, moonlighting, self-employment, etc.). As R.Solow (170) has pointed out, segmentation is due to the build-up of firm-or industry-specific human capital. Mutual "knowing-what-to-expect" of both parties (workers and firms) gives them "a stake, a rent in the durability of the relationship". Further there are non-trivial sources of

---

(NOTE 1) These situations are called "corner solutions" because when the budget constraint is not continuous for whatever reason (non labour income, standardized hours, etc.) the indifference curves of the representative worker-consumer are no longer tangential to the budget constraint. This in turn implies that the individual labour supply can change radically when the wage rate increases enough or when the exogenous constraint which determines the kink in the budget frontier is relaxed.

---

non-employment income. Home production, partial farming, education, etc. can be alternatives to paid working activity. The family itself is an institution which decreases unemployment risk and redistributes working burdens. Social institutions produce their effects in the labour market through unemployment insurance and public employment. Social conventions have their own importance too. As a matter of fact they modify the rules of competition in the labour market. (G. Akerloff (3),(4)

The existence of the family in particular plays a fundamental role. The pool of different sources of income permits decisions regarding labour supply which are similar, in many aspects, to capital decisions or, in other words, to intertemporal choices between labour and non-labour time. K. Arrow (2), for instance, recalls the traditional observation that labour does not have the nature of a stock, because it is perishable by definition. "The worker must sell and sell now" and there is no advantage to delaying working activity and to enjoying anticipated leisure.

This criticism is undoubtedly correct when it refers to the usual individual representative agent of neoclassical theory. This abstract figure has no sex, no family, no age; for him, income lost is lost forever. But when a family exists things become much more complex.

If a subsistence condition does not exist, there is at least partial, freedom to choose among economic alternatives. Working burdens can be distributed among members of the family of different ages and sex. A high percentage of middle-aged males participate in the labour market. They are highly competitive and unemployment is very low, simply because a breadwinner cannot remain jobless too long. Married women behave differently. Their participation follows typical patterns which are linked to the economic and social stage of growth of modern societies. Participation of married women historically follows a characteristic U shaped curve. When the agricultural sector is large, women's work can "easily" be combined with domestic production, so that statistically, a high proportion of women are employed. When industrial growth produces a transfer of the labour force towards urban industrial centers, the scarce skills of women and the difficulty of combining paid work and home production decreases the female participation rate. When the weight of the services sector eventually increases, by both creating new jobs and increasing those services that substitute home functions, then married women re-enter the labour market.

In conclusion one must remark that the decision to offer working time depends on many factors. K. Arrow (2) points out that there is practically no economic decision without capital components. Neoclassical students contemporary to Keynes arrived at agnostic conclusions about labour supply and labour market dynamics for the same reasons. The overlapping of opposite effects did not permit clear deductions on the relationship between wage rate (price) and total labour supply (quantity). Hence a diffused skepticism existed as regards the relationship between economic policies and labour market responses. Modern neoclassical labour economics has instead developed several microeconomic approaches to the labour supply, to analyze institutional and social phenomena.

1.2 Static models concerning the allocation of leisure and consumption.

The **static allocative models of leisure and consumption** are models that explain the behaviour of a representative **worker-consumer** on a microeconomic basis. (NOTE 2)

(NOTE 2) Two quotations clarify the concept of representative consumer-worker:

> "The statistical information on consumer behaviour ,which is available to us , always relates to the behaviour of groups of individuals such as, for instance, the consumers of a particular commodity in a particular region. It is always material of this character which we have to test: and indeed it is material of this nature which acquires a prima facie plausibility when it is applied to a statistical average. To assume that the representative consumer acts like an ideal consumer is a hypothesis worth testing: to assume that an actual person, the Mr.Brown or Mr. Jones who lives round the corner does in fact act in such a way does not deserve a moment's consideration" - wrote J.Hicks, (83)

Houthakker-Taylor (86) further reinforced this approach by writing:

> "The theory of dynamic preference ordering here is strictly in terms of a single individual , yet we apply it to entire countries. In so doing we ignore the aggregation problem, on which there is a voluminous literature. Rather than add to this inconclusive discussion we simply state as our opinion that of all the errors likely to be made in demand analysis the aggregation error is the least troublesome."

From this point of view "the theorist becomes entirely the servant of the econometrician" (Brown-Deaton (47))

One has also to mention opposite views. W.Hildenbrand (83) for instance has demonstrated that:

> "(...) aggregating individual demand over a large group of individuals can lead to properties of the market demand function F, which, in general , individual demand functions f do not possess there is a **qualitative difference** in market and individual demand functions. This observation shows that the concept of a "representative consumer", which is often used in literature does not, realyy simplify the analysis; on the contrary, it might be misleading" (83), pag.998

Therefore Hildenbrand deems to have demonstrated that Hick's opinion on the unreliability of the information on individual income effects for studying the demand function is arguable and an economic theory of consumption should also take income distribution into account.

J.Hicks (79) firstly formalized the problem by treating this abstract figure like that of a **consumer-seller** of one of his own goods, i.e. his **own disposable time.**

This economic agent acts to maximize his own utility function. The fundamental assumption of these models is that **time is an economic good,** because it is **scarce, useful** and **enjoyable** in itself and **exchangeable** with other commodities. But assuming the economic nature of time, there exists a constraint exists on the maximun quantity of income that can be earned.

The usual problem of allocation of consumption must then be redefined in terms of **full-income** (G.Becker (18), that is to say the sum of property income and potential labour income or, in other words, the sum of consumption and leisure. Leisure is simply considered to be the complement of working time. (NOTE 3)

To recall the concept of full income, let T be the maximum feasible working time. Leisure is then given by the difference L = T - h, where h are working hours. In equilibrium the hourly wage w is equal to the marginal substitution rate between leisure and consumption of other goods and services and the marginal utility of consumption is equal to the marginal disutility of labour. The hourly wage represents therefore the shadow-price of leisure.

The problem can be formalized as follows:

$$(1) \qquad y = \sum_{(i=1)}^{n} p_i x_i + (T-h)w$$

Work in this formulation implies only disutility for the economic agent. In reality leisure has no true utility in itself. Time , to produce enjoyable services, has to be combined with other goods and services. In this way the problem pertains to the conceptual schemes of production theory. (R.Muth, (122), K.Lancaster, (98)).Yet this particular extension of the microeconomic theory of labour supply (which was first explored in the pioneering works of G.Becker) creates enormous problems for the empirical analysis of aggregate national data. Hence in what follows the theory of allocation of time will be disregarded.

Unfortunately even a theoretical synthesis of all the different aspects of labour supply has not been yet attempted. The tools of economic analysis

---

(NOTE 3) This is obviously an over-simplification which rules out several important facts. Becker's theory is only concerned with the **economic use of leisure.** Moreover its approach is not at all linked to neoclassical equilibrium models of the labour market. Leisure could be overabundant when the worker-consumer is unemployed or under-employed. Becker' approach can then subsume the existence of this exogenous contraint by simply rescaling downwards the equivalent market price price of leisure. Ashenfelter (3) has shown how, introducing a "spill-over" effect on the demand for consumption in this framework.

Leisure finds its own meaning only when free-time is combined with the enjoyment of commodities and services. As has already been pointed out problems of economic interpretation start just at this point. Taking all non -working time as homogeneous leisure is merely a way of allowing a first treatment of the issue.

apply to specific and particular aims. So the theory of time allocation has nothing to say about the role of uncertainty in the labour market. Implicit contracts and job search theory focus specifically on the nature of unemployment and disregard the individual labour supply of the employed labour force. None of these, embodies important effects like those deriving from standardized working hours, self-employment,and non convex budget constraints. (NOTE 4)

In short, one can conclude by saying that the correctness of each definition of labour supply depends (as Cain-Watts wrote (34)) on the question that the empirical study aims to investigate.

As regards the specific form of the utility function many problems arise.
i) First of all, many authors think that the hypothesis of perfect substitution between working and non working time, has little meaning. M.B.Jonhson (90), A.W.Evans (58) , A.C.De Serpa (52) (53) have pointed out that work for itself can have its own utility. Therefore work should explicitly appear among the arguments of the utility function (NOTE (5)).

Another question concerns the choice of a specific mathematical form for the utility function. Every empirical work must choose between an exact **integratable system** (which automatically satisfy all the necessary conditions which ensure the economic coherence of the demand functions) and a **non-integratable approximate system**, which does not derive from an a priori utility function, but is subject to tests concerning the respect for

==========

(NOTE 4) There is however, among the few attempts to close this gap, the essay by Burdett-Mortensen (33).

==========

(NOTE 5) A.W.Evans (58) observes that the traditional separation between consumption and leisure has found its defensive arguments in the fact that hours of leisure cannot be increased without decreasing hours of work.

> "That this is incorrect must be realized when the usual two-good case is considered in which the consumer maximizes a utility function:
>
> (n.1.1) $u = u(x_1, x_2)$
>
> subject to:
>
> (n.1.1) $y = p_1x_1 + p_2x_2$
>
> It is obvious that in this case the quantity of the first good that is consumed cannot be varied without the quantity of the second good also being varied. Nevertheless none would think of omitting x_2 from the utility function on these grounds" ((55),page 4)

==========

the first and second order conditions of the demand functions. (NOTE 6)

==========

(NOTE 6) Let the following equations be demand functions derived from a process of maximization of the utility function $U = u(x_1,...x_m,l)$ under the budget constraint (1). (Symbols have the usual meaning)

(n.1) $$x_i = f(p_1,...,p_m,w,T,m)$$

for i= 1 to n goods; where m is non-labour income.

$$l = f(p_1,...,p_m,w,T,m)$$

These functions must satisfy the following conditions:
Prices are equal to the marginal utilities of their respective good

(a) $$Ux_i=p_i \ ; \ U_l=w$$

The sum of the expenditure for goods and that for leisure is always equal to the full-income

(b) $$p'x + wl = m + wT = y$$

Engel's aggregation: the marginal propensities to expenditure add up to 1. (i.e. the consumer chooses coherently)

(c) $$p'x_y = 1$$

Cournot's aggregation:

(d) $$(p,w)'x_{p,w} = -(x,l)'$$

Simmetricity of the Slutsky matrix:

(e) $$S = S'$$

On the contrary it would be possible to find different baskets with less of some good and equal quantities of the remaining goods, which give the same utility for the economic agent.

Homogeneity of degree zero in prices: (i.e. there is no money-illusion)

(f) $$(p,w)'S\ I = 0$$

Semidefinite negative substitution matrix: (i.e the consumer-worker is a maximiser of his utility)

(g) $$zSz' \ (= 0 \quad z=/=0$$

where z is a non negative vector.

A second point concerns the measurement of leisure time.It is not easy. In fact, to define the border between true leisure and nearly fixed temporal needs for vital necessities (sleeping, resting, eating, etc.) some authors choose to specify directly the maximum feasible working hours, while others choose, to avoid such an a priori assumption in empirical studies. Abbott-Ashenfelter (1) reduce the budget constraint to non labour income and estimate the maximum feasible working time. Barnett (6) specifies directly the full income constraint.

Closely connected to this problem is that of the **price of leisure**. Within a general equilibrium approach the **shadow price** of leisure is the hourly wage a worker gives up when he offers less than his disposable time. In this case the only leisure that has some value is that of employed workers. Unemployment is a voluntary choice and people outside the labour market enjoy valueless leisure. Barnett points out that such an hypothesis is highly biased and he therefore proposes to correct the price of leisure, by rescaling the hourly wage by means of the rate of unemployment and the participation rate. In this way, non working members of the family also contribute to the household's allocative choices.

1.3. The Linear Expenditure System.

Within the class of the Static Allocative Models of Leisure and Consumption (SAMOLC) that are locally linear with respect to income, the expenditure system derived from the utility function of (Klein-Rubin-Samuelson) Stone-Geary is particularly simple and this approach generally offers satisfying empirical results. This function is written as:

$$(2) \qquad U(x) = \sum_{(i=1)}^{n} B_i \log(x_i - g_i)$$

where x_i are the quantities of goods demanded at constant prices; g_i are pre-

---

(NOTE 6 continued)

Furthermore there is another **empirical** condition to respect:
All the elasticities in respect to income have not to be all equal to 1 at the same time

On the contrary, when income changes, the expenditure shares for all goods remain the same (given constant prices). In other words the utility function is homogeneous and homothetic. This contradicts Engel's law as K.Yoshihara (200) pointed out.

The admission of the existence of a common preference ordering for all the agents does not solve all the problems. This is not in fact a sufficient condition. In order that the aggregate demand finctions behave like the micro-economic functions, it is necessary for all consumers' Engel curves to be parallel straight lines. This implies in turn no income distribution effects. To complicate the question Sonnenschein and Debreu (171), (50) have shown that it is also possible to construct individual preferences and distribution of income so that any demand function, however unreasonable, is the sum of individual demand equations each conforming to the theory. The most important conclusion is thus that only Walras's identity and continuity remain after aggregation. All the Slutsky conditions are irrelevant in the aggregate.

allocated quantities (or "subsistence" quantities); B_i are the marginal propensities to consume supernumerary income (or income exceeding the sum of the preallocated quantities)

Given the budget constraint:

$$(13) \qquad \sum_{(i=1)}^{n} p_i x_i = y$$

and maximising (2), one obtains the following expenditure system:

$$(14) \qquad p_i x_i = p_i g_i + B_i (y - \sum_{(k=1)}^{n} p_k g_k)$$

.....

$$p_n x_n = p_n g_n + B_n (y - \sum_{(k=1)}^{n} p_k g_k)$$

Abbott-Ashenfelter (1) have enlarged this system by incorporating into it a further equation for the consumption of leisure. The budget constraint is consequently re-written in terms of full income.
Given that $wh=w(g-l)$ (where h, are hours of work; g_n maximum working hours and l hours of leisure) the expenditure system takes the form:

$$(I.5) \qquad p_i x_i = p_i g_i + B_n (m + w g_n - \sum_{(k=1)}^{n} p_k g_k)$$

$$-wh = -w g_n + B_n (m + w g_n - \sum_{(k=1)}^{n} p_k g_k)$$

There are however some new problems specifically regarding aggregation theory. When the LES is enlarged to labour supply it is necessary to assume other restrictions (NOTE 7)

==========

(NOTE 7) If the budget constraint refers to the full income instead of the usual money income then the expenditure for each i.th good is written as follows:

$$(n.I.3) \qquad \frac{1}{N} \sum_{(v=1)}^{N} x_{iv} = g_i + \frac{B_i}{p_i} \left(\frac{1}{N} \sum_{(v=1)}^{N} y_v - \frac{1}{N} \sum_{(v=1)}^{N} w_v g_i - \sum_{(i=1)}^{n} p_i g_i \right)$$

for v=1 to N individuals and i=1 to n goods

==========

(NOTE 7 continued)

or

$$(n.\ I.4) \qquad x_i = g_i + \frac{B_i}{p_i}\left(y - wg_i - \sum_{(i=1)}^{n} p_i g_i\right)$$

J.Muellbauer (120) has shown that the enlarged system is plausible only in terms of expenditure, even though the existence of standardized hours and non convex budget constraint make the traditional neoclassical approach highly unrealistic.

If the wage varies with the quantity of labour supplied (for instance, because of overtime premium, etc.) the indifference curves of the worker could be tangential to the convex budget constraint at more than one point. If the income function is not continuous, then there are possibilities of suboptimal choices, (for a specific treatment of the endogenous wage rate see A.Powell (154)). But for leisure this transformation is not possible:

$$(n.\ I.5) \qquad \frac{1}{N}\sum_{(v=1)}^{N}(T-h_v) = g_1 + B_1\left(\frac{1}{N}\sum_{(v=1)}^{N}\frac{y_v}{w_v} - g_1 - \frac{1}{N}\sum_{(i=1)}^{n}\sum_{(v=1)}^{N}\frac{p_i g_i}{w_v}\right) =/=$$

$$g_1 + \frac{B_1}{w^{\#}}\left(y^{\#} - w^{\#}g_1 - \sum_{(i=1)}^{n} p_i g_i\right)$$

Exact linear aggregation is not permitted with reference to the average working hours. On the contrary exact linear aggregation is possible in terms of expenditure for leisure.

$$(n.\ I.6) \qquad \frac{1}{N}\sum_{(v=1)}^{N}(T - h_v)\,w_v = \frac{1}{N}g_1\sum_{(v=1)}^{N}w_v + B_1\left(\frac{1}{N}\sum_{(v=1)}^{N}y_v - g_1 w^{\#} - \sum_{(i=1)}^{n}p_i g_i\right)$$

$$= g_1 w^{\#} + B_1\left(y^{\#} - g_1 w^{\#} - \sum_{(i=1)}^{n} p_i g_i\right)$$

or in terms of labour supply:

$$(n.\ I.7) \qquad -\frac{1}{N}\sum_{(v=1)}^{N} h_v = -g_1 w + B_1\left(w^{\#} + g_1 w^{\#} - \sum_{(i=1)}^{n} p_i g_i\right)$$

In conclusion worker-consumers in conclusion refer their choices to a non-manipulable vector of prices of goods. The shadow price of leisure instead varies from individual to individual. But even in the case of an expenditure formulation there are nonetheless greater problems. The number of consumer-workers depends upon the price of leisure. So the number of economic agents which are in a "corner position" is not exogenously given.

1.4 Allocative models with disequilibrium effects.

O.Ashenfelter (3) has elaborated a static allocative model which embodies disequilibrium effects arising from unemployment. When households are obliged to reduce their working time, they suffer income losses. There is therefore a spill-over effect which decreases consumption.

In mathematical terms:

$$U = u(T - h^*_1, l_2, \ldots, l_m, x_1, \ldots, x_n) \qquad (I.8)$$

where h^* are the constrained maximum hours for the member of the family who is unemployed or under-employed; l_j (for j=1 to m) are the quantities of leisure allocated by the other non rationed members.

The budget constraint then becomes:

$$\sum_{(i=1)}^{n} p_i x_i = m + w_1 h^*_1 + \sum_{(j=1)}^{n} w_j h_j \qquad (I.9)$$

By imposing the Stone-Geary function the consequent LES can be divided in two parts:

i) for the fully-employed workers:

$$w_j j_r = g_{rj} w_j - B_r (m + g_{jr} w_j - \sum_{(i=1)}^{n} p_k g_k) \qquad (I.10)$$

$$w_j h_j = g_{rj} w_j - B_r (m + g_{rj} w_j - \sum_{(i=1)}^{n} p_k g_k)$$

for i=1 to n and for j=1 to m.

ii) for the constrained workers:

$$w_1 h^*_1 = w_1 h_1 - w_1 h_1 D \qquad (I.11)$$

$$p^*_1 x^*_1 = g_1 p_1 + B_1 (m + g_{r1} w_1 - \sum_{(k=1)}^{n} p_k g_k) - B_{m1} D (g_{r1} w_1 - B_r (m + g_{r1} w_1 + - \sum_{(k=1)}^{n} p_k g_k))$$

where $h_m < h$.

The coefficient D is the measure of the rationing on the labour market and B^*_1 are corrected marginal propensities to consume.

(I.11.a) $$B^*_i = B_i / (1-B_n)$$

Ashenfelter makes a further simplification to reduce the variable D to a measurable quantity. D thus becomes a function of real unemployment.

(I.12) $$-wh = -g_n w + B_n(m + g_n w - \sum_{(k=1)}^{n} g_k p_k) + g_n w - B_n(m + g_n w - \sum_{(k=1)}^{n} g_k p_k)) u^*$$

$$p_i x_i = g_i p_i + B_i(m + g_n w - \sum_{(k=1)}^{n} g_k p_k) - B_i^* g_n w - B_n(m + g_n w - \sum_{(k=1)}^{n} g_k p_k)) u^*$$

where u* is a function of measured unemployment.

The empirical results derived from this model seem to confirm the existence of a spill-over effect on consumption and labour supply of non rationed members of the representative household.

1.5 Rotterdam models of consumption-leisure allocation

As an alternative to Linear Expenditure Systems some authors have proposed to apply Rotterdam models (Abbott-Ashenfelter (1); Barnett (7), Bronsard & alt. (29). They have disregarded Yoshihara's criticism (200), or, like Barnett, have reintrerpreted the Rotterdam models' basic assumptions to bypass such a contradiction.

a) Abbott-Ashenfelter's version of the Rotterdam model.

Given the following demand functions:

(I.13) $$x_i = x_i(w, p_1, \ldots, p_n, m)$$

$$l = l(w, p_1, \ldots, p_n, m)$$

by totally differentiating one obtains:

(I.14) $$dx_i = \frac{\partial x_i}{\partial w} dw + \sum_{(j=1)}^{n} \frac{\partial x_i}{\partial p_j} dp_i + \frac{\partial x_i}{\partial m} dm$$

$$dl = -dh = \frac{\partial l}{\partial w} dw + \sum_{(j=1)}^{n} \frac{\partial l}{\partial p_j} dp_j + \frac{\partial l}{\partial m} dm$$

Given that dZ=d logZ, a logarithmic transformation of the former system allows us to rewrite it in the form:

(I.15) $v_i d\log x_i = K_{in} d\log w + K_{ij} d\log p_j + B_i((1-v_n) d\log m + v_n d\log w - v_k d\log p_k)$

where m is non-labour income and v_i are the expenditure shares of each item. System (I.15) can be interpreted as follows. On the left-hand side the change of the demand for each good is represented, measured by its contribution to the Divisia index of quantity; the right hand member is the sum of two effects deriving from a real-income component and a substitution component arising from price changes.

The Rotterdam model has one feature in its favour. It does not constrain the sign of the cross-price elasticities and therefore it also admits also the existence of complementarity among goods.

Abbott-Ashenfelter have characterised their approach by trying to avoid an a priori evaluation of leisure time. They have interpreted the term:

(I.15.bis) $(1-v_n)\, d\log m + v_n d\log w - \sum v_k d\log p_k$

which appears in the re-formulated system (I.15). The two first terms should measure real-income changes, because they are a weighted mean of non labour income and wage variations. This assumption is however a matter for debate.

Barnett (8) does not accept this because, from his point of view, it contains a fatal confusion of three definitions of income (namely private consumption, labour income and wealth).

b) Barnett's Rotterdam model

Barnett's reformulation of the Rotterdam model derives from Theil's former contributions (182). As it is well known, if one assumes that the Rotterdam demand functions are integratable, then the collective utility function results as a Cobb-Douglas function (that is to say homogeneous and homothetic). But this contrasts with Engel's law. If the system is not integrable, then it has no known properties and it is deprived of a theoretical basis.

Barnett has tried to avoid this dilemma by interpreting the macroparameters as a mean of a stocastic distribution of microparameters of individual agents. Hence it is possible to suppose that the properties of the parameters of the demand system are analogous to those of individual demand functions.

Given different preferences and income for each consumer, even though income and prices change with time, the assumption of such a stocastic distribution, permits us to assume (as the number of consumers approaches infinity) that the parameters of the demand system converge on the mean values of locally constant functions.
Thus:

(I.16) $B^{\wedge} = E(m_c B_{ic}) / E(m_c)$

$K^{\wedge}_{ij} = E(m_c K c_{ij}) / E(m_c)$

In concluion, the macroparameters are a weighted average of micro-parameters coefficients with weights proportional to income.

Hence their properties do not derive from an a priori collective utility function: rather, they are constants deriving from a theoretical construction

and they are evaluated in a single point.

As regards the constancy of parameters over very long historical periods, Barnett's effort aimed at justifying such a seemingly unrealistic assumption. This author has thus pointed out that an implicit trend component within the income term certainly adds a bias to the econometric estimates. But the Rotterdam model takes weighted changes in expenditure into account. Thus it is not at all clear whether a temporal trend biases some parameters positively or negatively. There is no a priori reason to reject the constancy of parameters.

Barnett's system shows other interesting features. Consumption and leisure are computed on a per-capita basis (where the term per-capita refers to the entire able-bodied population. Abbott-Ashenfelter (1) only took into account only the labour force). Barnett has based this specification on a complex intra-family allocative model. This model also contains spill-over effects resulting from rationing situations for some household members in the labour market. Unemployment thus helps to correct the shadow-price of labour which results from rescaling the wage rate downwards. Barnett has underlined that his approach solves the problems of over-estimation of the full income which are present in Abbott-Ashenfelter's model.

c) Other Rotterdam models.

Two other Rotterdam models must be mentioned. N.Kiefer (95) has applied a Bayesian approach to estimate a classical Rotterdam system. The peculiarity of this study is that the restrictions which ensure the coherence of the demand functions are not imposed, but they are assumed as a priori information.

Bronsard & alt. (28) have compared neoclassical and disequilibrium hypotheses about the labour supply. Their conclusions are concerned with the difficulty of discriminating empirically the superiority of one of these models.

1.6 Dynamic Linear Expenditure Systems.

R.Stone was the first student to criticize his own static model and suggest new "dynamic" versions. However this needs a qualification: Stone's and the following models are not properly dynamic because they cannot embody a real scheme of intertemporal choices. They introduce only stock and habit formation effects, and make some parameters of the system vary over time. To clarify this, two different approaches are distinctly treated in what follows. The first is Pollack-Wales' approach (150).

These authors chose to assume dynamic preallocated quantities g_i. Their simplest model introduces pre-allocated quantities as a linear or quadratic function of time:

$$(I.17) \quad g_{it} = \varepsilon_i + \alpha_i t + \eta_i t$$

The utility function can then be rewritten as follows:

$$(I.18) \quad U(x_i) = \sum_{(i=1)}^{n} B_i \log(x_i - \varepsilon_i - \alpha_i t - \ldots)$$

where $B_i > 0$; $\sum_{(i=1)}^{n} B_i = 1$; $(x_i - \varepsilon_i - \alpha_i t - \ldots)$

Another solution consists in writing the present preallocated quantities as functions of past consumption, so that the g_i quantities take the form:

$$(I.18.1) \quad g_{it} = \alpha_i Z_{it}$$

$$(I.18.2) \quad g_{it} = \varepsilon_i + \alpha_i Z_{it}$$

In this case the parameters of g_i must respect the condition $0 < \delta < 1$ to ensure long-run stability. Z_{it} represents some simple or weighted mean of past consumptions. For instance the simplest version could be:

$$(I.19) \quad Z_{it} = (1 - \delta) \sum_{(i=1)}^{n} \delta^{\tau} x_{i(t-1-\tau)}$$

that is a geometric mean of past values. In this case one could consider the parameter δ as a "memory coefficient" of the habits system. Yet many other specifications are equally admitted (NOTE 8).

(NOTE 8) From a theoretical point of view, there are some interesting points to which attention should be drawn. Within a dynamic approach we should always distinguish between short and long-run demand. The first one can be mathematically expressed by expressions very similar to those of the static approach. Long-run demand functions however can be expressed only by means of a very restricted class of mathematical forms. Pollack (144) has classified such forms. The proof of the existence of long run demand functions derives from a theorem

---

1.7 The Stone-Houthakker-Phlips approach

The **state adjustment** models are based on the assumption that all the past experiences concerning consumption can be condensed within a **state-function** which influences the pre-allocated quantities of the present. In mathematical terms, this can be expressed by means of the following differential equation:

(I.20) $\quad S_{it} = x_i q_{it} - \delta S_{it}$

for i=1 to n

The preallocated quantities are partly determined by the usual level of consumption δS_t and for a remaining share by the **innovation** in expenditure S_t. Also in this case it is possible to distinguish between **physiological** and **psychological** components which determine the preallocated quantities g_{it} of

---

(note 8 continued) put forward by Gorman (67) and from two theorems by Pollack (145) (See Appendix I). Pollack however has urged caution in using the definition of long-run demand. He has underlined that even though long-run demand functions exist, they are not an appropriate tool for judgements about welfare problems. The long-run utility function, even when it exists, **does not** reflect consumers' preferences, but is a simple index of long-run behaviour.

But what is behaviour? Some interesting observations have been made by A.Sen (165). In a 1973 lecture he pointed out that:

> "All the important results in this field depend on (the) relationship between behaviour and welfare through the intermediary of preference" (165), p. 253.

Thus:

> "(...) the interest of revealed preference theory lies in the skilful use of the assumption that behaviour reveals preference and not, despite claims to the contrary, in explaining "behaviour without reference to anything other than behaviour" And "(...) even if all (other) problems are ruled out there remains a fundamental question on the relation between preference and behaviour arising from a problem of interdependence of different people's choices which discredits individualistic rational calculus. (...) People may be induced by social codes of behaviour to act as if they have different preferences from what they really have. This type of departure may also be stable for those codes since such behaviour will justify itself in terms of results from the point of view of the group as a whole" (165), p. 258

The question is of crucial importance for the theory of individual labour supply because choices on this matter are certainly subject to group conditioning. This precisely the field that the pioneering works of G.Akerloff (I.3) , (I.4) have begun to explore.

---

the LES:

(I.20.1) $$q_{it} = \vartheta_i + \alpha_i S_{it}$$

The latter parameters can be easily interpreted:
a) $\vartheta > 0$ means that habits effects are dominant (in other words the greater past consumption has been the greater is present consumption).
b) $\vartheta < 0$ means that stock effects are prevailing (or, the greater is the stock of durable goods, the less the need for new consumption).

It is possible to distinguish further between short and long-run functions by simply assuming $S_t = 0$.

By substituting the afore-mentioned expressions of the preallocated quantities q_i into the utility function and deriving it under the budget constraint one obtains as usual the following first order restrictions:

(I.21) $$x_{it} = \vartheta_i + \alpha_i S_{it} + \frac{B_i}{\lambda_t p_{it}}$$

(I.22) $$\lambda_t = \frac{\sum_i B_i}{m_t - \sum_i p_{it}(\vartheta_i + \alpha_i S_{it})}$$

Obviously the variable S_{it} is not known, so that the system must be algebrically manipulated to eliminate the presence of S_t. Furthermore the system conceived in continuous time must be translated into discrete time through an approximation of S_t by the first difference of the state-function. After some algebric manoeuvres, one eventually obtains the following linear demand functions:

(I.23) $$x_{it} = K_{i1} + K_{i2}x_{i(t-1)} + K_{i3}\Pi_{it} + K_{i4}\Pi_{i(t-1)}$$

where $\Pi_{it} = \frac{1}{\lambda_t \delta_{it}}$; $\Pi_{i(t-1)} = \frac{1}{\lambda_{(t-1)} p_{i(t-1)}}$

and:

$$K_{i1} = \frac{2\vartheta_i \delta_i}{2 - \alpha_i + \delta_i} \quad ; \quad K_{i2} = \frac{2 + \alpha_i - \delta_i}{2 - \alpha_i + \delta_i}$$

$$K_{i3} = \frac{B_i(\delta_i + 2)}{2 - \alpha_i + \delta_i} \quad ; \quad K_{i4} = \frac{B_i(\delta_i - 2)}{2 - \alpha_i + \delta_i}$$

From this function one can easily derive the analytical expressions of the four parameters. ϑ , α , δ , β for each item of goods.

L.Phlips inserted the supply of labour (through the Abbott-Ashenfelter specification) into this dynamic system (141).

1.8 Dynamic demand systems extended to rational intertemporal choices

This kind of model, recently elaborated by Phlips-Spynnewyn (142), represents a very interesting step forward to produce an empirical model from more sophisticated theoretical hypotheses. While the afore-mentioned versions are based on adaptive expectations, completely depending on past consumption, this new generation of dynamic models tries to comprehend the formation of future habits. In other words they postulate that the representative worker-consumer is conscious of the future effects that his future choices will have on his preferences.

Such a problem was first formalized by C.Lluch (106). Phlips and Spynnewyn (142) generalized this result by assuming an hypothesis of decentralized choices, namely, a weak intertemporal separability of utility function arguments.

They have also renamed the first generation of dynamic models as "myopic" because they assume that strong separability exists between present and future utility functions. Their new rational model, embodies future habit effects by simply modifying the definition of budget constraint and by introducing habits and stock effects into the definition of financial wealth.

Phlips and Spynnewyn rewrote the equations of the committed quantities, state variables and total wealth, in the following form:

(State equation)

$$x_{it} = S_{it} - (1-\delta)S_{i(t-1)} \qquad (I.24)$$

(Committed quantities)

$$g_{it} = \vartheta_i + \alpha_i S_{i(t-1)} \qquad (I.25)$$

(Wealth budget constraint)

$$W_{F(t+1)} = (1 + r_t)(W_{Ft} + Y_t - y_t) \qquad (I.26)$$

where W_F is financial wealth, y_t budget of period t, Y_t future labour income, r_t interest rate.

The wealth constraint includes, in this case, both wealth deriving from financial wealth, and that deriving from human capital. As a matter of fact, if the worker-consumer is conscious of his habit formation mechanism, then equation (24) can be rewritten, simply by introducing another parameter Ψ, which reflects precisely this assumption:

$$\Psi_{(t+1)}S_t = \Psi_{(t+1)}x_t + \Psi_{(t+1)}(1 - \delta)S_{(t-1)} \qquad (I.27)$$

for $\overline{i=1}$ to n goods

Total wealth thus can be defined as follows:

$$W_t = W_{Ft} + W_{Ht} + \Psi S_{(t-1)} \qquad (I.28)$$

The worker-consumer however does not refer his choices to effective market prices. He discounts these prices Ψ by taking into account his knowledge of the habit or stock formation mechanism:

$$C_t = p_t - \Psi_{(t+1)}/(1 + r_t) \qquad (I.29)$$

Supernumerary income then results as:

$$(I.30) \qquad m_t = \sum_{n(i=1)} (p_{it} - \psi'_{i(t-1)}/(1+r_t))(x_{it} - g_{it})$$

If one assumes (so as not to introduce too many complexities) constant inflation and interest rates, it is possible to introduce the correction factor.

$$(I.31) \qquad \varepsilon_i = (r + \delta_i)/(r + \delta_i - \alpha_i)$$

this transforms short-run coefficients into long-run coefficients and presents the property of reducing the demand system to one analogous to the static model.

The great advantage of this model is that it permits simple econometric procedures, similar in all respects to those applied to the former "myopic" dynamic models. This model undoubtedly shows very interesting theoretical features, even if the assumption of constancy of inflation and interest rate is still unrealistic.

1.9 A Survey of Empirical Results of the ELES.

The econometric application of the various models presented above has yielded results which do not contradict the fundamental neoclassical hypothesis of a simultaneous allocation of leisure and consumption. The existence of a "backward bending curve" of individual labour supply is generally confirmed, even though the slope of such a curve is not very high.

For all the countries and for all the models presented the resulting values of β_i have been plausible. This coefficient falls within a range going from 0.06 to 0.25 with a tendency to approach 0.15 (See Table I.1).

The growth of private consumption in several Western countries therefore seems highly correlated to a simultaneous demand for ever more leisure or non-working-time. In some cases, furthermore, the enlargement of the demand system to include labour supply seems to solve obvious incongruities of the usual simple models.

These allocative models show evidence of a positive non-compensated elasticity of leisure to the hourly wage. This means that income effect overcomes price effect in the demand function; that is to say the slope of labour supply is negative. Time series analysis therefore confirms the results of a huge quantity of microeconomic studies based on cross-section data.

From the empirical viewpoint the most important result is undoubtedly the rejection of separability between leisure and consumption resulting from from Barnett's study (6). If this result were further proved, many empirical studies on labour market and consumption and many related forecasting methods would have to be greatly revised. It is in fact sufficient to remember that all the usual projections of future consumption categories disregard leisure substitution and complementary effects. The matter can be easily explained by recalling that neoclassical allocative models of leisure-consumption have been traditionallly proposed by the U.S. economic school. Yet the evolution of aggregate working hours in the U.S. has been so slow that the usual assumption of constant preferences as regards leisure in the short-run has been widely accepted. The enlarged demand system, however, could give really interesting results it applied to European countries where the downward trend of working hours has been very strong.

Table I.1 Empirical results of some labour-consumption allocative models.

AUTHOR	SYSTEM	COUNTRY	SAMPLE	B_1	g_n	η_c	η_{nc}
Abbott Ashenfelter	static sls	USA	(1929-67)	0.121	2357	0.037	-0.084
Tirelli	static sls	Italy	(1960-80)	0.213	2240	0.046	-0.149
		Germany	(1960-80)	0.147	2262	0.061	-0.085
		Greece	(1960-80)	0.089	2264	0.059	-0.029
Ashenfelter	sls with diseq.	USA	(1930-69)	0.061	2230		
Tulpule'	TELES	Australia	(1964-76)	0.244	2437		-0.065
Philips	dynamic sls	USA	(1929-67)	0.225	2609	0.14	-0.09
						0.04	-0.09
Pierarts-Philips	dynamic sls	Belgium	(1953-71)	0.195		-2.06	-2.74
						0.01	-0.08
Tirelli	dynamic sls	Germany	(1960-80)	0.128	2350		
Philips-Spinnewyn	din. intertemp.	USA	(1929-67)	0.108			
Barnett	Rotterdam	USA	(1890-1955)	0.258			
Abbott-Ashenfelter	Rotterdam	USA	(1929-67)	0.173		0.03	-0.143
Bronsard & al.	Rotterdam	Canada	(1953-78)	0.191			
Kiefer	Rotterdam	USA	(1929-67)	0.181			

In what follows , the LES have been examined separately from the Rotterdam models. Static LES, have the advantage of being simple and flexible and of usually giving results which are relatively coherent with theory. They can be easily applied to forecast future consumption, even for highly disaggregated data (See G.Liso-D.Tirelli, (185)). However they present obvious difficulties in respect to the budget constraint in the first part of the sample period (particularly for models without heteroschedasticity and autocorrelation correction). Furthermore, even in the form of first differences they are often affected by autocorrelation of residuals. Finally it is not clear which meaning to attribute to fixed committed quantities. As a matter of fact, their values change when the sample period changes.

The dynamic LES, both "myopic" and "rational", unfortunately do not combine formal elegance with quality of empirical results. It is to be noticed first of all, that the enlargement of the system to labour supply, for instance, produces relevant changes in the parameters of the Phlips system applied to U.S. data. Second, the dynamic LES aims to explain too many facts simultaneously. So even though, in the American case, the estimated coefficients of such a system do not contrast with the theory, an attentive evaluation of such parameters brings some problems to light. The dynamic patterns of consumption of some categories are probably unrealistic (too rapid stock depletion or too strong habit effects). In the Belgian case the results are evidently worse because some goods do not even respect long-run equilibrium conditions.

Furthermore the parameters estimated by means of the intertemporal rational model are once more noticeably modified and their values depend upon the a priori specification of the exogenous and constant expected rates of inflation and interest. Thus, even though the empirical results do not contradict their theoretical bases, the usefulness of such a model as a tool of econometric forecasting is doubtful. As regards Rotterdam models, the best empirical results are undoubtedly those obtained by Barnett (6). He presented the estimates of a 5 items system with a very high number of significant parameters, even when all the restrictions of homogeneity, symmetry and negativity were imposed. Further, the typical presence of autocorrelated errors does not appear. The constant terms are not significant (that is to say, the system explains all the functional relationships by itself, without the corrective adjustment of the presence of unexplained trends). Barnett explains the very good performance of his model, by citing the enlargement of the system to include labour supply. His Rotterdam model furthermore permits the reinforcement of such a conclusion by rejecting the statistical tests concerning separability of leisure and consumption as part of the utility function of the representative worker-consumer. Leisure and consumption of durable goods turn out to be complementary as the new theory of household production and time allocation postulates .

The remaining Rotterdam models show more modest results. They typically have many parameters that are not significantly different to zero, they also have difficulties in passing Log-Likelihood tests about the admissibility of increasingly strict restrictions and they often need the presence of constant terms. In their favour one could recall , the already mentioned theoretical conclusions of Sonnenschein and Debreu on the irrelevance of the restictions on the Slutsky matrix at a suitable level of aggregation, but they are nevertheless interesting for some innovations. Bronsard & alt. have demonstrated the empirical equivalence of Walrasian and disequilibrium hypotheses concerning labour supply. Kiefer (95) has made efficient use of the superior flexibility of Bayesian econometric methods to impose a priori specification of the constraints.

1.10 Some extensions of the empirical results of the ELES.

a) Static ELES

A first step before experimenting with more complicate specifications has been to apply customary models to new data, to create a basis for further comparison. Table I.1 and Table I.2 show the results which have been obtained by applying Abbott-Ashenfelter's approach to Greek, German and Italian data. Few comments are needed. **Food & Beverages** and **Clothing** show high propensity to consumption in the countries with lower per-capita income. On the contrary **Transport** and **Recreation** have a higher propensity where per-capita income is higher. The propensity to consume leisure however is not so clearly related to per-capita income. Italy, which in 1960 was one of the Western Countries with longer annual working hours, in 1980 was one of those countries with shorter annual working hours. The model therefore captures and explains such a dramatically decreasing trend in terms of a very high propensity to enjoy leisure. Further details on this specific case will be added in Chapter I.

When one examines the non-compensated elasticities of labour supply to wages, it emerges that (at the sample mean) Italy shows a very strong slope of the labour supply curve. But if one computes the elasticities in 1980, Greece, has a higher negative elasticity, while Germany shows a quasi-vertical labour supply curve.

In conclusion it can be stated that, the empirical results derived from a simple static LES even in the European framework are very close to former results.

b) Phlips' dynamic ELES.

As far as we know, the enlarged dynamic LES has been applied twice by Phlips (141) and Phlips-Pieraerts (143). The first attempt was made using U.S data ranging from 1939 to 1967; the second one was with Belgian data ranging from 1953-1971. Unfortunately the very good performance of the first study has not been repeated for the Belgian case. But if dynamic models of pure demand systems (both linear and quadratic) have been positively tested, the enlargement of the system to include the demand for leisure, in our opinion, implies significant complexities from the empirical viewpoint. This is quite understandable considering the poor quality of labour supply and hourly wage data. Annual working hours show strong cycles that do not depend upon labour supply. The aggregation hypotheses which extend industrial working hours to other sectors as services and agriculture are particularly weak. In countries where deep structural changes have produced large demographic movements from one sector to another, the enlarged dynamic demand system as a result shows evident difficulties in managing individual labour supply.

These observations could explain our failure to apply Phlips' dynamic model to countries like Italy and Greece. Of three attempts of estimating models based on National Account time series of Italy, Greece, and Germany, only the last one has given partly acceptable empirical results. The two remaining cases have shown perverse signs in the labour supply equation thus making even a rough interpretation impossible.

From Table I.3 which summarizes the results of the econometric model proposed by Phlips when applied to German data we note the wrong sign of $K14$ for **Food & Beverages**; **Transport** and **Miscellaneous Goods and Services**. These facts produce corresponding implausible high δ_j' (NOTE 9).

(NOTE 9). To simplify the interpretation of equations (23) one should recall that:

i) δ_i is the rate at which habits change or stock depreciates. Allowing for purchases made in the current year to depreciate during the same periods, permits one to compute the "true" depreciation coefficient that, as D.Weiserb (196)
has demonstrated, is equal to:

$$(n.I.7.1) \qquad \delta^{*} = \frac{2\delta}{\delta + 2}$$

To respect the obvious condition (of long-run equilibrium) δ_i (= 1, it is necessary to have negative values for K_{i4}. But δ_i must moreover be positive, thus K_{i3} has to be greater than K_{i4} in absolute value.

ii) α_i can be both positive and negative. α_i) 0 means that the consumer's taste is quantity diminishing and α_i (0, that the change of taste is quantity augmenting.
In fact, given that:

$$(n.I.7.2) \qquad g_i = \vartheta_i + \alpha_i S_{(i,t)}$$

the committed quantities, when α_i) 0, are subject to a habit formation mechanism and when α_i (0, they are subject to a stock adjustment mechanism. The difference $(\delta_i - \alpha_i)$ gives an estimate of the adjustment coefficient of the stated variable to the desired level.
iii) The short-run B_i must all be positive so that $(K_{i3} - K_{i4})$ must be positive. Therefore K_{i3} must be positive and greater than K_{i4} in absolute value. Furthemore K_{i2} must be (1 in absolute value. From the estimated B_i it is then possible to compute the $B^{\wedge}_i$ by means of normalization:

$$(n.I.7.3) \qquad B^{\wedge}_i = \frac{B_i}{\sum_{(i=1)}^{n} B_i}$$

The long-run committed quantities g^{*}_i derive from:

$$(n.I.7.4) \qquad g_i = \frac{\delta_i \vartheta_i}{(\delta_i - \alpha_i)}$$

The long-run marginal propensities B^{*}_i derive from:

Looking at Table I.4 the B_i are all positive and the normalized short-run values $B^{\wedge}_i$ follow the same logic as their static long-run counterpart, except **Clothing** with $B^{\wedge}_i$ much higher than B^{*}_i and **Housing** which shows a lower short-run value. These effects are due to the abnormally high and low adjustment coefficient : $(\delta_i - \alpha_i)$.

One should further recall that which these adjustment coefficients assume a wrong negative sign (that is to say K12 is greater than 1), the long-run g*i will be greater than the observed purchased quantities with a consequent failure of the system with respect to the budget constraint in all the periods.

As regards labour supply, the short-run marginal propensity falls within the usual range of estimated results. Yet the long-run marginal propensity is exceptionally low because of the very high adjustment coefficient.

In trying to estimate Greek and Italian data, the impossibility to obtain correct signs for K_3 and K_4 in the labour supply equation for a reasonable number of iteractions of the models has made any global evaluation of the system impossible

---

(note 9 continued)

$$(n.I.7.5) \quad B_i = \frac{\dfrac{\bar{B}_i\delta_i}{\delta_i - \alpha_i}}{\sum_{(i=1)}^{n} \dfrac{B_i\delta_i}{\delta_i - \alpha_i}}$$

Table I.2: A comparison among empirical results of a static ELES applied to three European countries

	Marg. propensities to expenditure: β_i			Committed quantities (in $ USA)		
Items	Italy	Germany	Greece	Italy	Germany	Greece
Food, beverages tobacco	0.192	0.175	0.280	472	1113	273
Clothing	0.073	0.073	0.113	113	335	67
Housing	0.85	0.156	0.118	164	418	84
Furniture	0.073	0.099	0.103	79	357	52
Health	0.052	0.031	0.031	48	70	14
Transports	0.132	0.175	0.159	115	180	45
Recreation	0.068	0.070	0.029	94	192	29
Others	0.110	0.074	0.081	144	219	42
				maximum working hours		
Leisure (Labour supply)	0.215	0.147	0.088	2240	2262	2264

Data ranging from 1960 to 1980.

Table I.3 Regression coefficients of the Dynamic ELES applied to Germany's data (1960-1980)

	K_1	K_2	K_3	K_4	R2 between actual and fitted
(1)					
Food, beverages, tobacco	871.0	0.701	252.2	17.2	.998
	(102.7)	(0.040)	(31.4)	(29.3)	
(2)					
Clothing and footwear	403.4	0.520	194.1	-15.7	.991
	(27.4)	(0.036)	(18.5)	(18.1)	
(3)					
Housing	59.2	0.984	56.4	-19.8	.994
	(50.1)	(0.046)	(35.7)	(32.1)	
(4)					
Furniture	190.9	0.830	97.1	-7.38	.991
	(40.5)	(0.05)	(36.8)	(31.3)	
(5)					
Transport,communication	199.5	0.515	337.0	106.1	.984
	(45.7)	(0.039)	(52.2)	(53.3)	
(6)					
Miscellaneous	119.5	0.791	76.5	13.9	.996
	(21.1)	(0.040)	(14.6)	(13.5)	
(7)					
Recreation	36.4	0.923	40.6	-5.18	.994
education, health	(17.3)	(0.043)	(12.9)	(9.9)	
(8)					
Labour Supply	-1509.1	0.759	108.5	-9.24	.999
	(60.8)	(0.025)	(9.8)	(5.1)	

Table .I.4 Structural parameters of the dynamic ELES applied to Germany's data

	δ	δ^*	α	$(\delta-\alpha)$	θ	B	B^	g*	B*
Food, beverages tobacco	2.28	1.07	1.93	0.35	583.1	144.1	.213	3786	.155
Clothing and footwear	1.70	0.92	1.07	0.63	312.7	138.0	.204	839	.062
Housing	0.96	0.65	0.94	0.02	62.1	38.4	.057	3729	.383
Furniture	1.72	0.92	1.53	0.19	121.5	57.1	.085	1123	.098
Transport & communication	3.84	1.32	3.20	0.64	68.6	152.4	.225	411	.151
Miscellaneous	2.89	1.18	2.65	0.23	46.2	34.9	.052	572	.072
Recreation Education health	1.55	0.87	1.47	0.08	24.5	23.9	.032	473	.076
Labour supply	1.69	0.92	0.74	0.95	1318.0	86.7	.129	2350	0.026

APPENDIX I.1

We recall here the enunciations of three theorem which ensure the existence of long-run demand functions in dynamic demand systems. Gorman (67), Pollack (145).

Gorman's theorem: If an individual's demand functions are linear in income and his preferences can be represented by an indirect utility function, (P,m), where m is the total expenditure and P a vector of prices, then there exists a function G, G) 0, and functions f(P) and g (P), homogeneous of degree one, such that:

$$(I.A.1) \qquad G[U(P,m)] = \frac{m}{l(P)} - \frac{f(P)}{l(P)}$$

where m is the total expenditure and P is a vector of prices []

Given that from such an indirect utility function one can derive the following demand functions:

$$(I.A.2) \qquad h_i(P,m) = g_i - \frac{l_i}{l} \sum p_k g_k + f_i - \frac{l_i}{l} f + \frac{l_i}{l} m$$

(where gi, fi are derivatives with respect to the i.th price), by introducing the habit formation mechanism, these equations are transformed into short-run demand functions

$$(I.A.3) \qquad h_{it}(P_t,m_t,x_{i(t-1)}) = E_i - \frac{1}{l} \sum p_k E_k + f_i - \frac{1}{l} f +$$

$$\frac{l_i}{l} m + \alpha_i x_{i(t-1)} - \frac{l_i}{l} \sum p_k \alpha_k x_{k(t-1)}$$

In the long-run (or "steady state") xi(t) = xi(t-1). Pollack furthermore has proved the following theorems:

Pollack's theorem 1: Suppose that the short-run demand functions are locally linear in income:

$$(I.A.4) \qquad h_i(P,m) = g_i - \frac{l_i}{l} \sum p_k g_k + f_i - \frac{l_i}{l} f + \frac{l_i}{l} m$$

and gi(t) is given by the linear habit function:

$$(I.A.5) \qquad g_{it} = E_i + \alpha_i Z_{it}$$

Then the long-run demand functions are given by

$$(I.A.6) \qquad h_i(P,m) = \Gamma_i(P) - B_i(P) \sum p_k T_k(P) + B_i(P) m$$

where

$$\text{(I.A.7)} \qquad \Gamma_i(P) = \frac{E_i + f_i(P)}{(1 - \alpha_i)}$$

and

$$\text{(I.A.8)} \qquad B_i(P) = \frac{\dfrac{g_i(P) \,/\, g(P)}{(1 - \alpha_i)}}{\dfrac{p_n \, g_i(P)/g(P)}{(1 - \alpha_i)}}$$

These equations form the basis for:
Pollack's theorem 2: The long-run demand functions which correspond to the Stone-Geary utility function:

$$\text{(I.A.9)} \qquad U(x) = \sum b_i \log (x_i - g_i) \; ; \; b_i > 0 \; , \; (x_i - g_i) > 0$$

$$-\sum b_i = 1$$

can be rationalized by the utility function

$$\text{(I.A.10)} \qquad U(x) = \sum B_i \log (x_i - \Gamma_i) \; ; \; B_i > 0 \; , \; (x_i - \Gamma_i) > 0$$

$$\sum B_i = 1$$

where Ti and Bi are given by:

$$\text{(I.A.11)} \qquad \Gamma_i = \frac{E_i}{(1 - \alpha_i)} \; ; \; B_i = \frac{\dfrac{b_i}{(1 - \alpha_i)}}{\sum \dfrac{b_i}{(1 - \alpha_i)}}$$

CHAPTER II

AN EMPIRICAL ANALYSIS OF ITALIAN HOUSEHOLDS' EXPENDITURE ON LEISURE AND CONSUMPTION

Introduction.

In this chapter the empirical results derived from a neoclassical allocative model of consumption and male and female individual labour supply are illustrated. This model refers to a representative household, which reflects the average behaviour of the national aggregates. Given the purely empirical aims of this study, several simplifications have been introduced to link theoretical schemes to the very poor statistical data presently available.

The representative household, like every agent of the neoclassical theory, takes its decisions in order to maximise its own utility function whose arguments are goods and services (which are consumed) and male and female leisure. This utility function shows all the classical properties and is subject to two time budget constraints and one income budget constraint. Even though real households are composed of several members, the representative household is assumed to have only two representative members: a male and a female. There are only two kinds of homogenous leisure and leisure is perfectly substitutable among the members of the same sex. This assumption even if it is clearly unrealistic, (given that many other factors play a role in determining labour supply: age, race, etc.), does not represent anything new. It is just an extension of Prais-Houthakker's homogeneity postulate (154). This postulate assumes that the household's demand functions are homogeneous of degree 1 with respect to income and family size. This means, in other words, that division and aggregation of different families does not produce changes in collective preferences. Furthermore this is a way of saying that economies of scale within a family's consumption activity are disregarded. But if this is admitted for consumption (as it usually is), its extension to leisure time is obvious. As a matter of fact, as Barnett underlines (6), economies of scale in leisure consumption are more improbable than those in any other consumption activity. Each one essentially consumes his own time independently of that consumed by other members of the family (We remind the more hostile reader that the approaches adopted here are not concerned with the problem of the allocation of time. Leisure is simply non-working time!)

Some further preliminary observations on the specificity of the Italian labour market are necessary. In fact it is well known that the high growth rate of the Italian economy since World War II has involved large structural changes in the labour force's composition. The most impressive fact has been the high labour mobility which produced a dramatic shift from agricultural employment, toward industry and , with a certain delay toward services.

The economic and sociological literature on this subject, is abundant. All the studies generally agree that the Italian employment and labour force have been substantially underestimated or only rougly measured. In Italy a "grey" or "hidden" share of the economy has developed side by side with the official economic activity.

The flow of income that Italian households received from this source certainly produced its own effects on their economic behaviour and ensured at the same time a remarkable flexibility towards the productive system. But even if we can intuitively recognize the existence of this phenomenon, it is not yet possible to arrive at a sure definition and a useful quantitative evaluation of it.

First of all, there is no reliable statistical information. Time series with regard to the labour market are dishomogeneous from the methodological view-point (in particular those referring to working hours) and are often discontinuous. Second, the official series have not been corrected to

include the hidden economy component. The Italian Statistical Office has often had to cope with the refusal of economic agents to give correct information. Small firms and their workers had in fact some interest in not enlarging the knowledge of their activity.

Among the several interesting studies on this subject that of B.Contini (42) deserves to be quoted. Contini has tried to reconstruct in detail the "true" aggregate labour supply to use it in some econometric exercises. He has estimated that the hidden labour market was near 20% of the potential labour force. This "irregular" component has probably corrected the rigidity of industrial and labour relations in medium-large firms. This was therefore one of the determinants of the high rate of growth of the Italian economy. Contini's work however did not pay attention to the evolution of working hours.

Another study, that of G.Fua' (65) has had a great impact in Italy. Even though it does not contain econometric estimates, the essay is full of interesting observations and interpretative suggestions about labour supply dynamics in Italy. In it Fua' drew attention to the peculiarity of the Italian case. During the 1950's and 1960's the absorbtion into industry and services of workers released from agriculture was largely insufficient. This fact appeared even more abnormal by taking into account that the male and female participation rate was one of the lowest among Western countries.

Table 2.1, 2.2 point out great changesin the participation rate of male and female workers which are common to many countries. This phenomenon involves a series of cause-effects linked to female employment. In fact the growing demand for female jobs has been directed towards specific economic sectors. In the majority of countries those employed in sectors like agriculture, food, timber and construction industries work above average hours. Conversely those employed in textiles and clothing and most services sectors have below average working hours. Growing female employment has been created by the expansion of these sectors and at the same time female employment contributed to decrease the length of annual working hours.

This fact together with the positive trend of female participation seems to imply a process of substitution among family members of work burdens. Thus while the agricultural sector shrinks many women lack sufficient education and skill for industrial or service jobs and they withdraw from the labour force. When Industrialization processes are well developed and the services' sector starts to increase, then the female participation rate increases as well. Industrial relations can also play a very important role. We see for instance from table 2.2 that where there is part-time employment (namely elastic working hours regimes) there is a greater female participation rate.

Fua' also underlined the importance to the households of internal mechanisms in allocating labour supply among their members. The Italian households, which moved from agricultural towards urban zones probably maximized collective utility functions, which had among others lower working hours, style of living, etc. as arguments. But the industrialization processes also offered a consistent amount of irregular jobs. The official employment and unemployment which thus resulted were probably both underestimated. It is quite difficult therefore to say what was the final result of all these biasing effects.

The study presented here focuses on the properties of joint allocation models. Thus following a pragmatic approach traditional neoclassical allocative models which do not take into account exogenous constraints on the choices of consumer-workers have been chosen for testing.

The problem of the hidden Italian economy therefore simply does not

Table II.1

LABOUR FORCE PARTICIPATION RATES(1) AND FEMALE SHARE OF LABOUR FORCE

(Per cent)

	1950			1977		
	Male participation rate	Female participation rate	Female share of labour force	Male participation rate	Female participation rate	Female share of labour force
Australia	99.7	29.6	22.4	89.6	51.7	35.8
Austria	97.4	51.1	38.5	82.4	48.1	38.5
Belgium	86.3	32.8	27.9	82.1	45.6	35.6
Canada	94.2	26.2	21.3	85.3	51.9	37.8
Denmark	100.4	49.6	33.6	91.0	67.3	42.2
Finland	97.9	59.9	40.6	78.3	64.7	45.8
France	93.0	49.5	35.9	84.4(2)	50.1	37.6
Germany	98.0	44.3	35.1	83.5	48.4	37.6
Greece	94.1	41.4	32.1	82.7(2)	31.2	27.7(3)
Iceland	100.0	40.9	28.5	93.9(2)	45.1(2)	31.6
Ireland	102.9	36.9	25.5	92.1(2)	33.3	27.5(2)
Italy	99.0	32.0	25.4	82.9	37.1	31.9
Japan	97.5	57.6	38.4	89.3	53.1	40.0
Luxembourg	92.5	37.6	29.2	85.5(2)	31.1(2)	26.2
Netherlands	95.1	28.5	23.4	81.9(2)	32.0(2)	28.0
New Zealand	95.9	30.0	23.5	86.2	40.4	31.5
Norway	99.7	36.6	27.1	87.4	58.5	39.6
Portugal	99.6	26.3	22.4	87.2	50.4	39.1
Spain	101.1	17.6	15.8	87.6(2)	32.5(2)	28.6
Sweden	98.6	35.1	26.3	88.1	70.0	43.7
Switzerland	100.3	39.1	29.7	92.2(2)	51.7(2)	34.1
Turkey	112.7	86.7	44.4	92.8(2)	53.2(2)	38.4
United Kingdom	97.2	40.7	30.7	91.3	57.3	38.2
United States	92.5	37.2	28.9	85.2	55.7	40.3

1) Defined as labour force of all ages divided by population aged 15-64.

2) 1975.

3) 1971.

Sources: OECD Labour Force Statistics, Demographic Trends 1950-1990, OECD, Paris, 1979.

Table II.2

PART-TIME EMPLOYMENT

(Per cent)

		Definition of part-time work	Proportion of male labour force part-time	Proportion of female labour force part-time	Proportion of part-time workers who are female
Australia	1978	less than 35 hours	5.2	34.9	78.8
Austria	1976	14-36 hrs.	1.6	18.4	87.0
Belgium(1)	1977	(2)	0.8	14.4	89.2
Canada	1978	less than 30 hours	6.0	22.6	71.6
Denmark(1)	1977	(2)	3.4	48.9	90.4
Finland	1978	1-29 hrs.	2.9	12.0	79.1
	1978	1-19 hrs.	1.2	4.9	78.8
France(1)	1977	(2)	1.8	13.1	82.0
Germany(1)	1977	(2)	0.7	25.0	78.5
Ireland(1)	1977	(2)	1.0	7.5	72.8
Italy(1)	1977	(2)	0.7	4.1	70.3
Japan	1978	less than 35 hours		17.2	65.2
Luxembourg(1)	1977	(2)	-	12.1	
Netherlands(1)	1977	(2)	1.4	19.1	82.2
New Zealand	1979	less than 30 hours	5.0	26.1	76.8
Norway	1977	less than 30 hours		43.6	
Portugal	1977	15-34 hrs.	2.5	16.5	80.6
Sweden	1978	1-34 hrs.	5.3	42.6	86.4
	1978	1-19 hrs.	1.9	10.2	81.2
Switzerland	1970	6-32 hrs.	5.0	36.0	76.8
U.K.(1)	1977	(2)	2.3	42.5	92.1
U.S.A.(3)	1977	less than 35 hours	9.3	26.9	

1) Persons with main occupation only.

2) Individuals own statement that their contracts were for part-time employment.

3) Employed on voluntary part-time (i.e. not on short time for economic reasons).

Sources: EEC countries, EEC Labour Force Survey.
Other countries: "National Reports"

concern the present models. It is probable therefore that the per-capita consumption of the household's active members could be overestimated. Valued leisure is equally underestimated.

Whether or not this fact biases the results obtained could be a subject of further research. It is however probable that without some more detailed information on the working time of workers of both sexes, few contributions can be added. The already mentioned models of Ashenfelter (2), (3), Barnett (7) and Bronsard (29) have shown that disequilibrium effects can be empirically treated. (See Chapter 1 of the Second Part)

The problem of a more accurate measurement of working time and participation rate has so far been partly dealt with in the present work. Appendix II describes a simple scheme of allocation of leisure and consumption of a representative household.

By referring to the observations developed in Chapter II two different approaches have been compared: the static and dynamic enlarged LES.

2.2 A static ELES of Italian households

The Abbott-Ashenfelter model needs, in our case, only slight modifications. Let H be the maximum feasible working hours that males and females could sell on the labour market. H does not differ between the two sexes (there is no a priori reason to postulate that women are less resistant than men to work!). Leisure (or effective non-working time) is given by:

$$(2.1) \qquad L_m = H - h_m$$

and

$$(2.2) \qquad L_f = H - h_f$$

Therefore the household's utility function is given by:

$$(2.3) \qquad U = f(x_1,\ldots,x_i,\ldots,x_n,L_m,L_f,y)$$

which has to be maximised under three constraints:

$$(2.4) \qquad h_m < H$$

$$(2.5) \qquad h_f < H$$

$$(2.6) \qquad \sum_{(i=1)}^{n} p_i + w_m L_m + w_f L_f =$$
$$= (w_m + w_f) H + I \qquad \text{(Household's full income)}$$

where p_i are prices, w_m and w_f are the hourly wages respectively, y is non-labour income. What distinguishes this formulation from the traditional one quoted in Chapter II is the assumption that working hours are different for men and women. To give a qualitative explanation for such a difference, Appendix II.1 sketches a simple scheme of utilitarian behaviour of a representative household.

By maximizing the utility function (2.2) under the three contraints (2.4), (2.5), (2.6), one derives the usual linear expenditure system:

$$(2.7.1) \quad p_i x_i = g_i p_i + \beta_i (y - \sum_k p_k g_k - w_m g_l^m - w_f g_l^f)$$

for i=1 to n goods,

$$(2.7.2) \quad w_m l_m = \beta_m (y - \sum_k p_k g_k - w_m g_l^m - w_f g_l^f)$$

for male leisure

$$(2.7.2) \quad w_f l_f = \beta_f (y - \sum_k p_k g_k - w_m g_l^m - w_f g_l^f)$$

for female leisure.

Equations (2.7.2), (2.7.3) include committed quantities of leisure g_{lm}, g_{lf}. But given that the representative (male and female) workers offer their working hours voluntarily, the pre-allocated minimum quantities of leisure become equal to zero.

Abbott-Ashenfelter chose to derive the maximum constant working hours under the restrictions $g_m \geq h$ in all periods empirically. In our case g_m is set equal to a predetermined quantity. Hence the two additional equations regarding labour supply or leisure consumption have been written in terms of expenditure for leisure.

Furthermore it is possible to eliminate this a priori assumption by empirically testing the values of the maximum length of the working week which better fit the data by means of a grid-search.

Appendix II.2 describes the source and the construction of the statistical data which have been utilized.

2.3 Econometric procedure to estimate an ELES and computation methods.

From the econometric viewpoint an LES estimate usually presents some problems. When the system is estimated in the simplest form (2.5) the residuals of its equations are highly autocorrelated. Theil (178) has thus suggested a first correction which consists in writing the system in first differences:

$$(2.8)\qquad D(p_{it}x_{it}) = B_i\,Dy_t + (1-B_i)\,g_i\,Dp_{it} - B_i \sum_{\substack{k=1\\k=i}}^{n} g_k\,Dp_{kt} + e\hat{}_t$$

where D is the first difference operator and e is a stochastic error which has the usual properties: $E(e\hat{}t, e\hat{}T) = 0$ when $t \neq T$; and $E = \Omega$ when $t = T$.

Furthermore, even though the system is applied to per-capita consumption this solution does not eliminate the trends of general economic growth and inflation. In fact following J.Muellbauer (115) the system must be written in terms of expenditure, so that the left-hand side variable is expressed in current prices. The residuals are then more widely spread in the last part of the sample period than in the first one. Yet heteroschedasticity can be partly eliminated through Theil's second transformation:

$$(2.9)\qquad \frac{2\,D(p_{it}x_{it})}{(y_{(t-1)} - y_t)} = \frac{B_i\,2Dy_t}{(y_{(t-1)} - y_t)} + \frac{(1-B_i)\,g_i\,2Dp_{it}}{(y_{(t-1)} - y_t)} - \sum_{\substack{k=1\\k\neq i}}^{n} g_k \frac{2\,Dp_{kt}}{(y_{(t-1)} + y_t)} - e^*$$

Furthermore Theil has demonstrated that equations (2.9) are equivalent to the following third order approximations.

$$(2.10)\qquad w_t\,Dp_{it} + w_{it}\,Dq_{it} = B_i\,(dQ_t + \sum_{k=1}^{n} \mu_{kt}\,Dp_{kt}) + \frac{(1 - B_i)\,g_i\,2\,Dp_{it}}{(y_{(t-1)} - y_t)} -$$

$$- B_i \left(\sum_{\substack{k=1 \\ k \neq i}} g_k \frac{2\,Dp}{(y_{(t-1)} - y_t)} \right) + e^*_t$$

where D is the operator: log x_t - log $x_{(t+1)}$ and et e^*_t are composite errors which ensure a constant var-covar matrix and an absence of autocorrelation.

The estimate of such a model can be easily made by means of some Maximum Likelihood methods. Barten (11), Parks (137), Berndt-Savin (21) and othershave shown that the problem of the singularity of the var-covar can be solved by simply deleting one equation from the system (or by writing a Bi as a linear function of the remaining ones).

We recall that the full system of n equations necessarily has a singular var-covar matrix so as to respect the budget constraint, $\sum_j e_j = 0$ at each observation. The above mentioned literature shows that the estimate of the system is invariable as regards which parameter is deleted. Formally the problem consists in computing the maximum of the following equation:

$$(2.11) \quad L(e^n) = \prod_t f(e^n_t) = 2\,\Pi^{[-(1/2)\,T(n-1)]} \cdot \left|\Omega\right|_n^{[(-1/2)\,T]} \exp\left[-(1/2) \sum_t (e^n_t)' \left|\Omega\right|_n^{-1} e^n_t\right)$$

where e_t are the errors of n-1 equations and Ω is the var-covar matrix of n-1 equations . Computations have been made by utilizing standard FIML procedures which are offered by TSP and SHAZAM statistical packages.

2.4 Empirical results of a static ELES

The results which have been obtained by means of the model described above are shown in TablesII.3; II.4; II.5. In Table II. one can note how the grid-search on the maximum weekly hours g_h maximises the Likelihood Function for the value of 48 hours. For the sake of clarity the standard errors of each parameter have been omitted; they ensure however, on the basis of the Student-t tests that all the estimated parameters are significantly different from 0, with the exceptions which will be mentioned.

First of all one notices that the marginal propensities to spend supernumerary income are positive and their values are near to those of the other studies mentioned in Chapter II. Second, all the g's are less than the consumed quantities throughout the sample; furthermore the committed quantities are all positive. This means that the aggregate items show "normal" properties. A partial exception is g_4 (for durables) which turns out to be not significantly different from zero. This can easily be explained. Goods like television sets, cars, domestic appliances, etc. should demonstrate (in the period which has been taken into account) the properties of "luxury" goods. As a matter of fact within the LES framework the own price elasticities are) 1 when g_i(0 and the i-th good is price-elastic.(NOTE 1) The durables' committed quantity equal to zero might thus be a specific peculiarity of this aggregate and not a result of a poor econometric specification. It is well known that the LES generally produces more precise estimates of the B_i's than the g_i. In fact normally collinear trends exist between expenditure for each branch and supernumerary income. Thus the B_i parameters can be evaluated with some precision. The g_i on the other hand absorb all price information. But if variations in real income are greater than those in relative prices, then income information is dominant over price information contained in the data. Theil's correction however seems to eliminate a large part of these biases.

(NOTE 1) Compensated and uncompensated elasticity formulae will be recalled.
i) Uncompensated price elasticities:

$$(n.1.1) \qquad (p_j/x_i)(\partial x_i/\partial p_j) = -\delta_{ij} + (\delta_{ij} - B_i)\,[(g_j p_j)/(x_i p_i)]$$

ii) Compensated price elasticities:

$$(n.1.2) \qquad (p_j/x_i)S_{ij} = (b_i - \delta_{ij})\,[(x_j p_j - g_j p_j)/(x_i p_i)]$$

where δij is the Kronecker delta equal to 1 if i=j and 0 if i=/=j.
iii) Uncompensated labour supply elasticities:

$$(n.1.2) \qquad (w/h)(\partial h/\partial w) = B_i\,[(g_h w - hw)/(x_i p_i)]$$

iv) Compensated labour supply elasticities:

$$(n.1.4) \qquad (w/x_i)\,S_{ih} = B_i\,[(g_h w - hw)/(x_i p_i)]$$

The calculated elasticities to prices and wages reported in table II.3;II.4 are also particularly interesting. The non-compensated elasticity to its own price is nearly -1 for durables, as a consequence of the afore-mentioned "quasi-luxury" characteristic of such commodities. Male labour-supply appears to be slightly "backward bending". By contrast female labour supply shows a positive non-compensated elasticity. These conclusions are not in contrast with other former qualitative analyses of the Italian labour market. The combined effects of different participation rates and the changing length of working hours can easily explain otherwise contradictory trends of female labour supply in Italy.

The female labour force has followed the typical U shaped trend, of developing countries while the male labour force was decreasing until 1974. (See figures (II.1), (II.2), (II.3)). Yet such a trend has been more than compensated for by the decreasing trend in working hours so that leisure enjoyed by male members of the Italian households has grown more than that of female members. Given that only the free-time of employed workers enters into the definition of leisure, the total amount of leisure of each representative member of the household depends upon its number of active components

By examining expenditure for goods elasticities with respect to wages one may note that given the great weight of male labour within the household's budget, all goods are more elastic to the male than the female wage. In particular when wages increase the consumption of durables increases more than that of other goods even though less than proportionally.

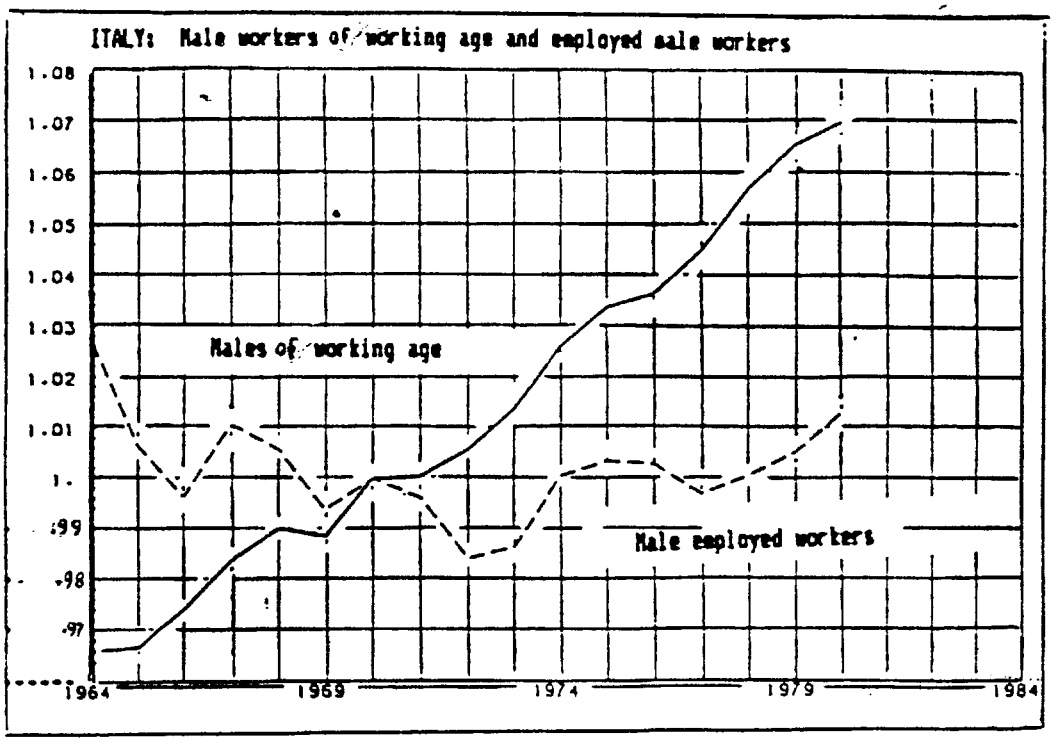


FIGURE II.1

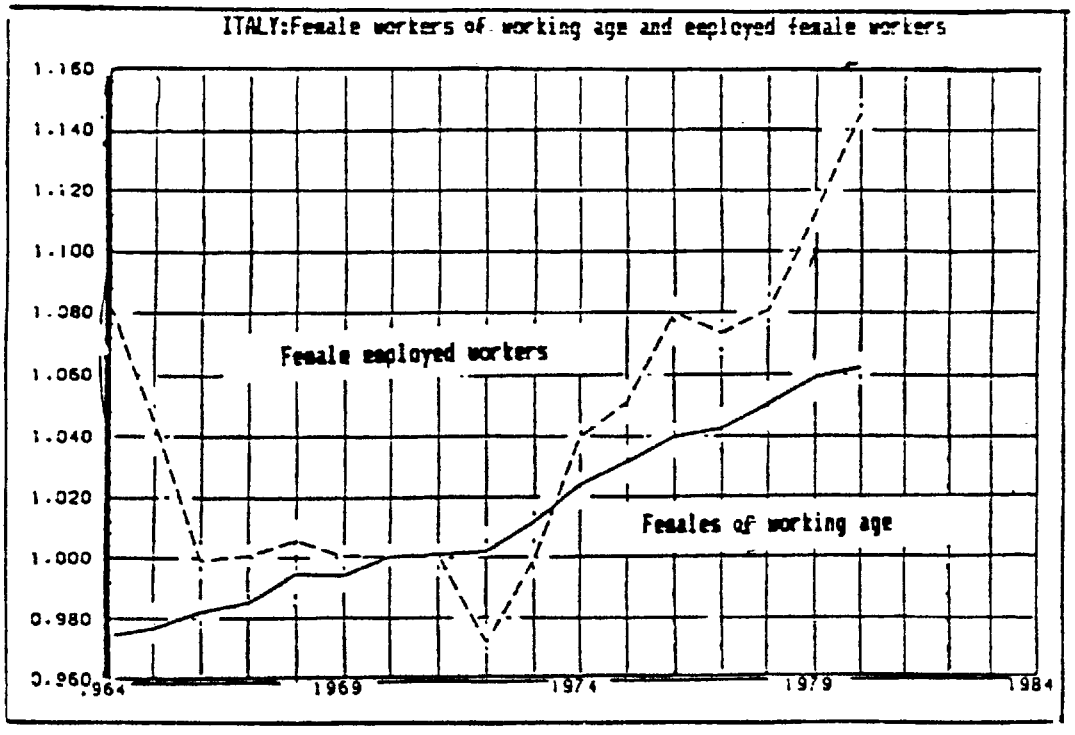


FIGURE II.2

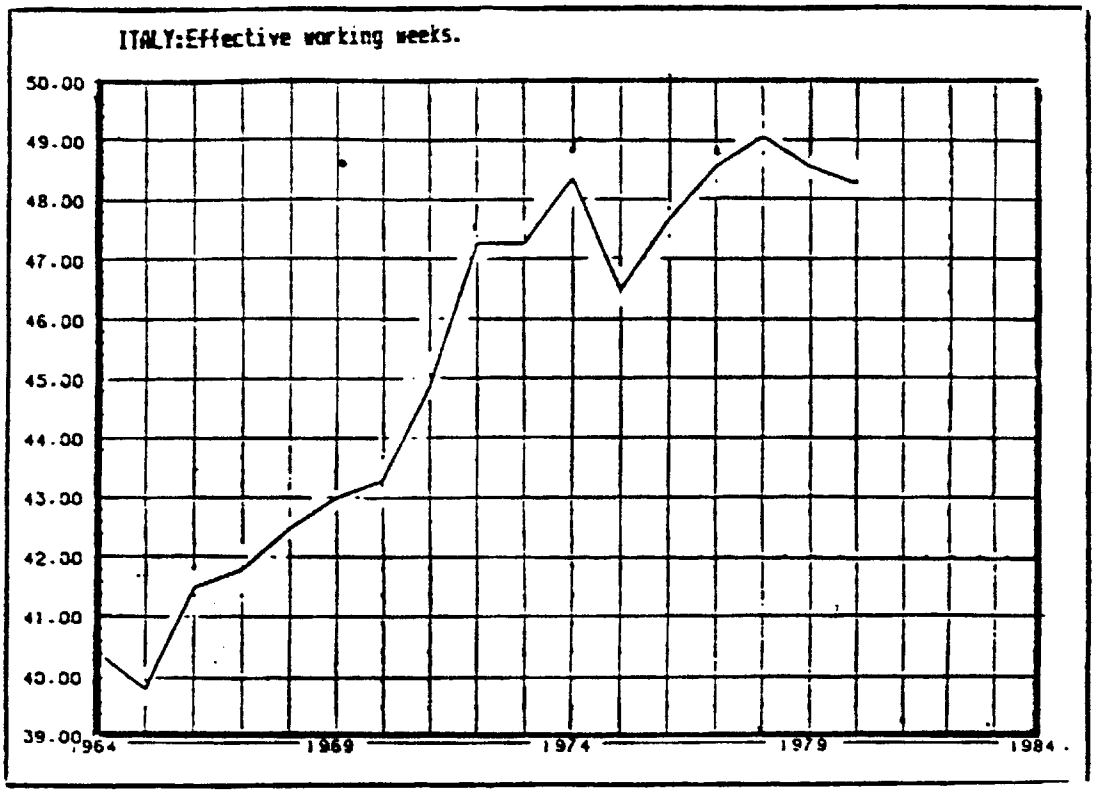


FIGURE II.3

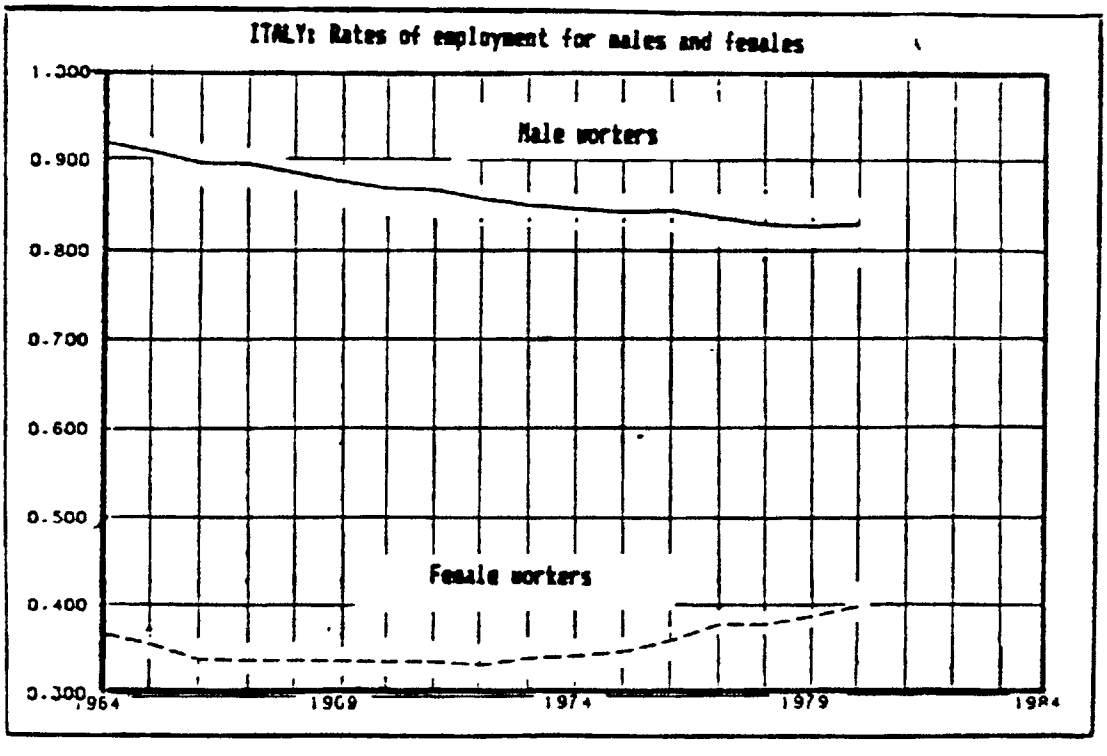


FIGURE II.4

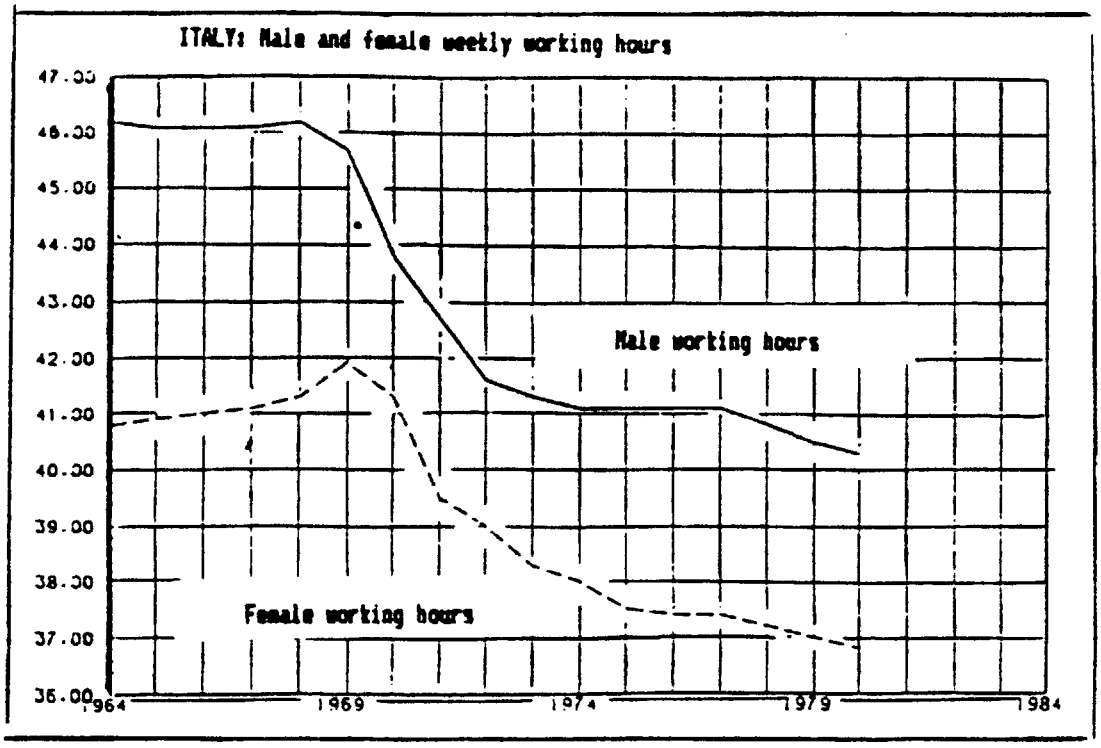


FIGURE II.5

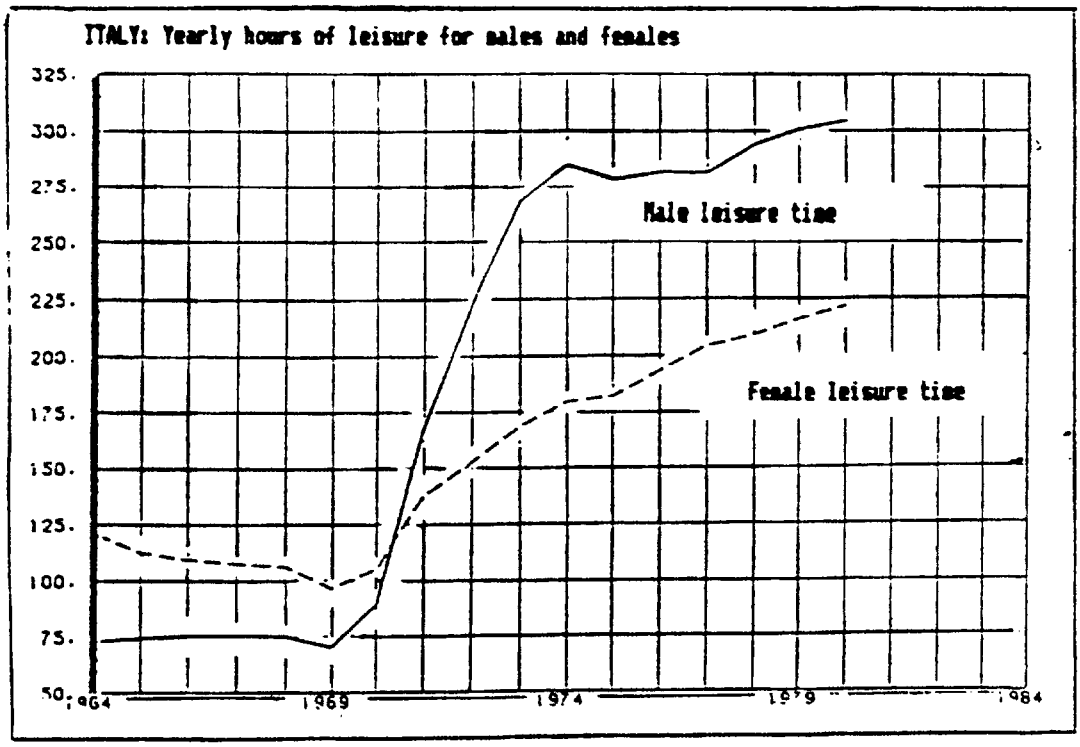


FIGURE II.6

Table II.3: Results of the "grid-search" on the parameter gh (maximum feasible weekly working hours)

Items	gh =47		gh =48		gh =50		gh =54		gh =58	
	Beta	Gamma	Beta	Gamma	Beta	Gamma	Beta	Gamma	Beta	Gamma
Durables	0.252	19.269	0.242	32.804	0.228	45.609	0.203	64.713	0.182	79.475
Non durables	0.360	1.086.820	0.349	1.100.010	0.325	1.112.264	0.291	1.142.123	0.253	1.176.320
Food & Beverages	0.149	848.351	0.146	853.827	0.114	876.204	0.108	886.665	0.108	886.665
Male labour supply	0.162		0.180		0.215		0.263		0.326	
Female labour supply	0.077		0.083		0.095		0.115		0.131	
Log.Max.Lik.	289.44		289.46		289.38		289.02		288.89	

Table II.4: Own price compensated and non-compensated elasticities

Items	Non-compensated elasticities	Compensated elasticities
Durables	-0.943	-0.700
Non durables	-0.532	-0.183
Food & Beverages	-0.319	-0.145
Male labour supply	-0.023	0.156
Female labour supply	0.196	0.279

Table II.5: Wage non-compensated and compensated elasticities

Items	Non-compensated elasticities	Compensated elasticities
Durables		
wm	0.881	0.090
wf	0.315	0.047
Non durables		
wm	0.348	0.055
wf	0.124	0.029
Food & Beverages		
wm	0.255	0.041
wf	0.091	0.021

2.5 A dynamic ELES of Italian households.

The results obtained by means of a static ELES applied to Italian household expenditures have suggested trying a more flexible specification of the representative household utility function.

Pollack's (144), (146), , suggestion to make the committed quantities a function of past consumption combines simplicity with a deeper economic interpretation of the ELES. Pollack's hypothesis on habit formation allows us to forsake the former assumption of an equal and constant maximum length of feasible working hours as equal and constant for both sexes. Changes in labour division between the sexes and the increasing participation of women in the labour market are undoubtedly the most striking phenomena of the contemporary Western economies. Hence an analysis of the relative demand for leisure should also take into account the self-reinforcing trends in male and female working activity.

Pollack's approach allows us to verify how changing committed quantities modify the former results. Four different specifications have been tried. Two of them regard the introduction of pure temporal trends (See equation (2.17) of Chapter II). These solutions, as Pollack-Wales (144) firstly pointed out, are not completely satisfactory. As a matter of fact (i) they do not elaborate upon the economic meaning of the ELES. (ii) They are very restrictive specifications of the habit formation mechanism and they often do not respect the budget constraint on many points. (iii) A quadratic trend is also practically useless for forecasting aims purposes.

The best and simplest choice is therefore to present committed quantities based on a proportional habit formation mechanism (See equations (2.18.1);(2.18.2) of Chapter II. The linear function (2.18.2) has been discarded because the committed quantities resulted as greater than the actual quantities for all goods over the entire sample.

Function (18.1) on the contrary fits the data quite well. The budget constraint is respected over the entire period and the regularity conditions are ensured as is the long-run stability. As regards the variable. Z_{it},given two available choices: a) a two periods moving average of past observations; b) a one period lagged observation - the second one appeared to give the best statistical results. **Table II.6** reports the results obtained by applying the econometric procedure that is described in Appendix II.2. One can observe that while **Durables** and **Non-durables** show substantially the same marginal propensities to spend supernumerary income, **Food & alt.** and **Male** and **Female leisure** show values that contrast with the static case.Within a dynamic context labour supply appears strongly linked to habit effects. The explanations can be found by noting that supernumerary leisure, has in this case,been largely rescaled down with respect to the static specification.

From Figure II.8; it is interesting to note the big jump in supernumerary male leisure (and also in female leisure) that follows the contractual season of 1969-70. Since 1969 the model shows exceptionally high short-run non-compensated wage elasticities as regards male and female leisure. Yet such elasticities return to their usual levels after such adjustments (See **Table II.7.1, II.7.2**). The mean of the short-run non-compensated elasticities on the sample period thus turns out to be -0.376 and -0.293 respectively for male and female leisure.

Another result which deserves attention is that of the cross-price elasticities between male and female labour supply. The representative Italian household tends to substitute increasing quantities of male labour supply with female labour when female wages increase. The elasticity of female leisure with respect to the male wage is on the contrary, rather low. A dynamic

	E.NC.11	E.NC.12	E.NC.13	E.NC.14	E.NC.15
1965	-.653484	.613585	.897578	.404099E-01	.295092E-01
1966	-.677868	.690686	.934525	.405958E-01	.335106E-01
1967	-.690046	.703352	.898644	.393637E-01	.342699E-01
1968	-.672566	.664697	.865012	.386519E-01	.336386E-01
1969	-.677587	.726865	.879655	.299936E-01	.223465E-01
1970	-.691597	.721967	.835013	.769126E-01	.454461E-01
1971	-.677697	.641942	.742375	.213670	.888078E-01
1972	-.681624	.704817	.730216	.202684	.694545E-01
1973	-.697126	.655375	.732834	.215776	.768924E-01
1974	-.657952	.583767	.686240	.178531	.816405E-01
1975	-.628246	.533295	.599737	.150523	.736232E-01
1976	-.682953	.570035	.606479	.153390	.815191E-01
1977	-.676486	.523552	.551968	.147932	.733095E-01
1978	-.667916	.563720	.578231	.178796	.830261E-01
1979	-.690486	.579024	.552086	.167929	.836256E-01
1980	-.686097	.557534	.492472	.149499	.785931E-01
	1	2	3	4	5

	E.NC.21	E.NC.22	E.NC.23	E.NC.24	E.NC.25
1965	.969352E-01	-.508071	.213882	.962920E-02	.703170E-02
1966	.999601E-01	-.521982	.216649	.941124E-02	.776868E-02
1967	.102727	-.524829	.208217	.912061E-02	.794038E-02
1968	.973790E-01	-.513846	.197768	.883787E-02	.769156E-02
1969	.966511E-01	-.524897	.197307	.672755E-02	.501230E-02
1970	.102060	-.527476	.191547	.176433E-01	.104255E-01
1971	.995775E-01	-.510170	.171512	.493646E-01	.205174E-01
1972	.991837E-01	-.522586	.166519	.462201E-01	.158385E-01
1973	.109611	-.521341	.178329	.525071E-01	.187111E-01
1974	.990730E-01	-.502489	.163868	.430077E-01	.196684E-01
1975	.911138E-01	-.489208	.143213	.359437E-01	.175807E-01
1976	.110324	-.506012	.153367	.387893E-01	.206146E-01
1977	.114470	-.500654	.146326	.392166E-01	.194342E-01
1978	.109429	-.508307	.150215	.464483E-01	.215689E-01
1979	.118963	-.516941	.147865	.449764E-01	.223974E-01
1980	.119058	-.512924	.133434	.405066E-01	.212946E-01
	1	2	3	4	5

	E.NC.31	E.NC.32	E.NC.33	E.NC.34	E.NC.35
1965	.106456	.163587	-.512493	.107737E-01	.786743E-02
1966	.114838	.183953	-.522064	.108120E-01	.892496E-02
1967	.123132	.195337	-.522765	.109322E-01	.951755E-02
1968	.119986	.187269	-.516894	.108896E-01	.947716E-02
1969	.121660	.205222	-.521551	.846836E-02	.630927E-02
1970	.134137	.217666	-.524939	.231884E-01	.137022E-01
1971	.136299	.203002	-.507952	.675691E-01	.290858E-01
1972	.141751	.229707	-.511174	.660565E-01	.226359E-01
1973	.155379	.226071	-.525980	.744315E-01	.255239E-01
1974	.145297	.206240	-.513513	.630735E-01	.288450E-01
1975	.136199	.190360	-.487267	.537294E-01	.252799E-01
1976	.161745	.218395	-.505548	.587674E-01	.312320E-01
1977	.177581	.215314	-.500191	.605381E-01	.301491E-01
1978	.172323	.230614	-.509741	.731442E-01	.339655E-01
1979	.194059	.253187	-.514598	.734297E-01	.365666E-01
1980	.211132	.267889	-.509817	.718327E-01	.377631E-01
	1	2	3	4	5

	E.NC.41	E.NC.42	E.NC.43	E.NC.44	E.NC.45
1965	2.48509	3.74833	5.48322	-.328215	.180269
1966	2.67556	4.28584	5.79889	-.333258	.207939
1967	2.82749	4.48556	5.73101	-.332392	.218553
1968	2.68618	4.19247	5.45592	-.325144	.212170
1969	2.85332	4.81311	5.82485	-.279964	.147972
1970	2.27050	3.68439	4.26129	-.473859	.231934
1971	1.12790	1.67988	1.94270	-.640501	.232399
1972	.876589	1.42051	1.47170	-.489849	.139981
1973	.755335	1.09898	1.22888	-.443184	.128939
1974	.666137	.945539	1.10160	-.370525	.132244
1975	.577911	.807726	.908361	-.309335	.111509
1976	.713886	.932775	.992412	-.332353	.133394
1977	.709583	.860358	.907054	-.324452	.120470
1978	.647432	.866436	.888741	-.356163	.127611
1979	.689708	.999858	.857994	-.342332	.129962
1980	.752199	.954405	.843029	-.337272	.134538
	1	2	3	4	5

	E.NC51	E.NC52	E.NC53	E.NC54	E.NC55
1965	2.41639	3.64470	5.33163	.240036	-.212195
1966	2.68153	4.29540	5.81182	.252466	-.245312
1967	2.89535	4.59321	5.86856	.257063	-.260708
1968	2.80088	4.37150	5.68890	.254201	-.258139
1969	3.10636	5.23994	6.34141	.216223	-.198004
1970	2.92636	4.74666	5.49220	.505884	-.335859
1971	1.97939	2.94806	3.40929	.981262	-.444752
1972	1.85501	3.00604	3.11436	.864444	-.333132
1973	1.76068	2.56172	2.96449	.843421	-.337465
1974	1.50282	2.13315	2.48567	.652374	-.335255
1975	1.23742	1.72950	1.94498	.488155	-.275674
1976	1.44161	1.88363	2.00406	.506864	-.306283
1977	1.38340	1.67735	1.76839	.473944	-.271778
1978	1.29086	1.72751	1.77198	.547917	-.291342
1979	1.35414	1.76674	1.68455	.512392	-.292071
1980	1.44534	1.83388	1.61987	.491744	-.295423
	1	2	3	4	5

	E.C11	E.C22	E.C33	E.C44	E.C55
1965	-.406798	-.146210	-.239302	-.246861	-.175285
1966	-.431183	-.160121	-.248894	-.251904	-.208403
1967	-.443351	-.162968	-.249574	-.251038	-.223798
1968	-.425881	-.151985	-.243704	-.243791	-.221230
1969	-.430902	-.163035	-.248361	-.198610	-.161095
1970	-.444912	-.165615	-.251748	-.392505	-.298930
1971	-.431012	-.148309	-.234762	-.559147	-.407842
1972	-.434939	-.160727	-.237984	-.408495	-.296223
1973	-.450441	-.159480	-.252790	-.361830	-.300556
1974	-.411267	-.140628	-.240322	-.289171	-.298346
1975	-.381561	-.127347	-.214077	-.227982	-.238764
1976	-.436268	-.144151	-.232358	-.250999	-.259373
1977	-.431801	-.138793	-.227001	-.243098	-.234869
1978	-.421231	-.146445	-.236951	-.274809	-.254432
1979	-.443800	-.155080	-.241408	-.260978	-.255162
1980	-.439412	-.151063	-.236627	-.255918	-.258513
	1	2	3	4	5

FIG. II.7.1- II.7.2: Non compensated elasticities with respect to cross and own prices (E.NC)
Compensated elasticities with respect to own prices (EC)
(1) Durables; (2) Non durables; (3) Food ; (4) Male leisure; (5) Female leisure.

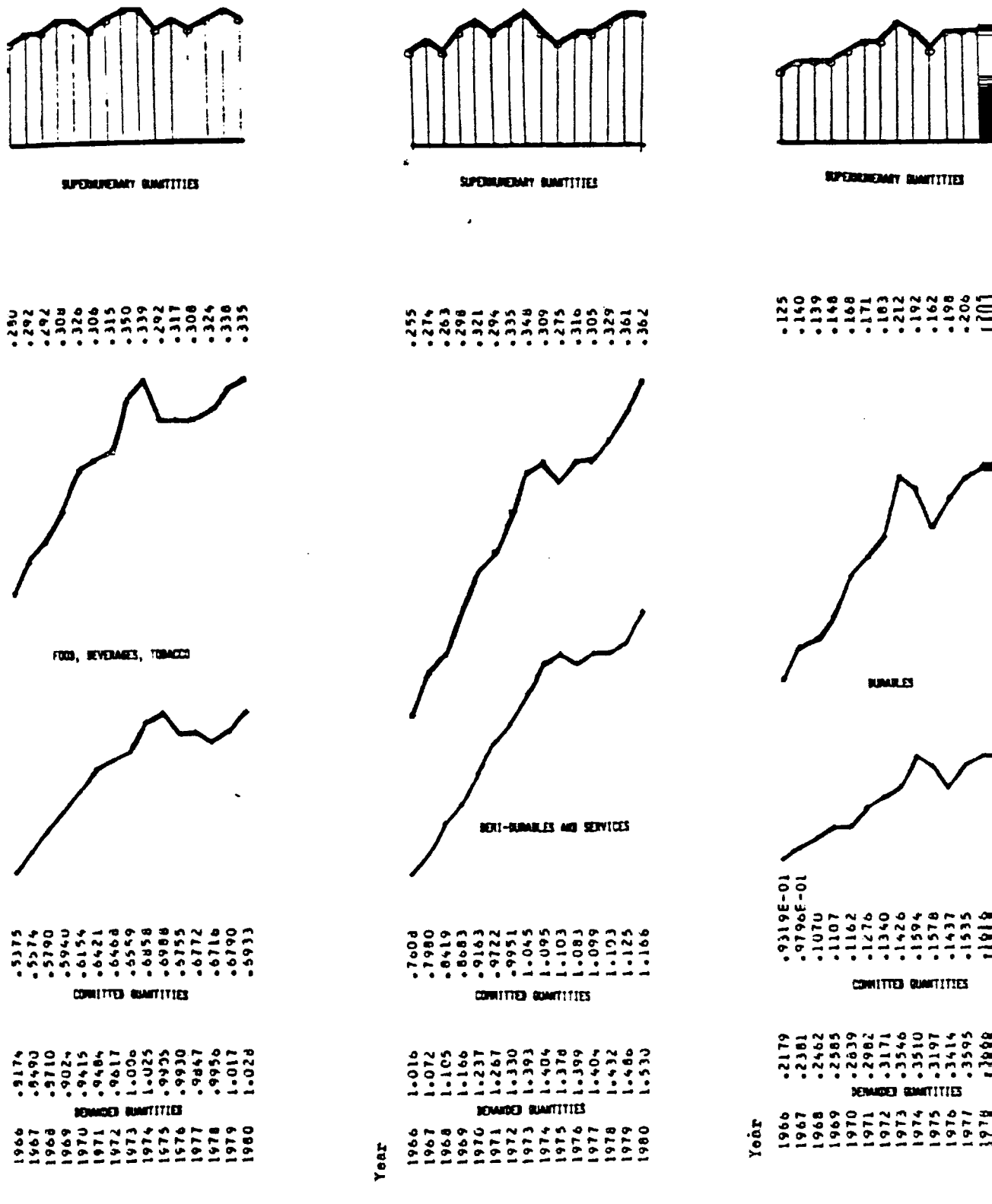
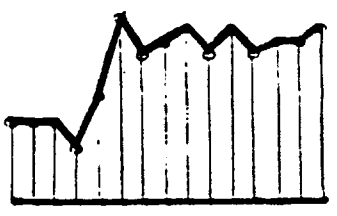


FIG. II.8: Demanded and committed quantities for the five branches of consumption and leisure of the representative Italian household.

SUPERNUMERARY QUANTITIES

Year	DEMANDED QUANTITIES	COMMITTED QUANTITIES	SUPERNUMERARY QUANTITIES
1966	.7024	.5098	.193
1967	.7075	.5142	.193
1968	.7050	.5179	.187
1969	.6584	.5161	.142
1970	.8415	.4820	.360
1971	1.0574	.6160	.958
1972	2.0075	1.1152	.923
1973	2.5006	1.5190	.987
1974	2.0077	1.0834	.843
1975	2.0000	1.4590	.647
1976	2.0025	1.9008	.717
1977	2.0014	1.9221	.691
1978	2.0729	1.9913	.816
1979	2.0790	1.9996	.793
1980	2.0831	2.0463	.759

MALE LEISURE



SUPERNUMERARY QUANTITIES

Year	DEMANDED QUANTITIES	COMMITTED QUANTITIES	SUPERNUMERARY QUANTITIES
1966	.9533	.7470	.206
1967	.9347	.7175	.217
1968	.9133	.7035	.210
1969	.8255	.6817	.138
1970	.9013	.5213	.290
1971	1.1176	.6781	.498
1972	1.2279	.8853	.393
1973	1.3399	.9024	.437
1974	1.5525	1.0053	.473
1975	1.5527	1.1488	.378
1976	1.5595	1.1149	.440
1977	1.5988	1.2701	.387
1978	1.6624	1.1195	.429
1979	1.6663	1.2223	.441
1980	1.7111	1.2652	.459

FEMALE LEISURE

FIGURE II.8

specification thus substantially reverses the conclusions of the static specification, at least as far as labour supply is concerned. Meanwhile a static ELES describes women's behaviour through a positively sloped labour supply curve. A simple habit formation mechanism leads back to the neoclassical hypothesis of a strongly backward bending supply curve of female labour supply.

The year following the contractual season in the Italian labour market, which has been called "autunno caldo" (1971-74) marks a sharp discontinuity in working time regimes. But also since those years the female participation rate shows an upturn. (See Figure (II.2)). Unions' bargaining power has also constrained the differential between female and male wages within narrows bands, and obtained at the same time a relative increase in the female wage. The model which has been estimated obviously cannot capture the relationships between decreasing working hours and participation rate. But, considering households as economic agents in the labour market, it is possible to translate these very complex social and economic dynamics into terms of substitution of female leisure. In this model the participation rate modifies the quantity of enjoyed leisure because only employed workers have valuable free time. It is however probable that this effect would be weaker if one also took into account the implicit price of free time for the unemployed and for people outside the labour market (See W.Barnett (6)). The difficulty of correctly measuring such shadow quantities for both sexes is however discouraging (particularly within dynamic specification) But many other factors of great importance have also been disregarded. There are a lot of implicit benefits and costs linked to the working activity. Fringe benefits and other facilities together with psychological elements related to social status increase the shadow wage; fixed costs (transport, clothing, eating, etc.) and "dead time" costs instead decrease such wage. Non-worker evaluation of leisure thus comes out to be only one among very many other determinants of familiar allocative choices.

Moving on to examine the parameters of the remaining goods one can note that Durables are more price-elastic than the other items even though their elasticity is lower than that implied in the static framework.

Puzzling results derive instead from non-compensated wage-elasticities. (See Tables II.7.1,II.7.2)Before 1969-70 they are very high, but Durables appear less sensitive than the other commodities to wage changes. From a mathematical viewpoint the reason is clear: during the sixties a large supernumerary consumption of goods and services corresponds to a small wage increase. After those years the weight of leisure in full-income grew and expenditure on goods and services decreased.

Table II.6 :Estimated parameters of the dynamic ELES of Italian households (1964-80)

Items	Beta	Beta*	Gamma	D.W.	R
Durables	0.247 (8.67)	0.130	0.449 (2.42)	2.05	.90
Non-durables	0.362 (7.21)	0.489	0.786 (7.41)	2.80	.89
Food, beverages tobacco	0.273 (7.91)	0.249	0.682 (5.11)	1.45	.89
Male leisure	0.081 (2.13)	0.086	0.732 (6.61)	2.00	.29
Female leisure	0.037 (2.60)	0.043	0.753 (7.91)	2.52	.16

R is the correlation coefficient of fitted and actual per-cent rates of growth of consumption at constant prices

* Long-run marginal propensities to spend

2.6 More on dynamic ELES of Italian households

Even though the dynamic ELES illustrated above gives good results, from the theoretical viewpoint its usefulness as an operative tool of forecasting is doubtful. In fact the model is not capable of pinpointing the turning points and the yearly rate of growth of male and female labour supply. This is due above all to the big jump at the beginning of the 1970's, which cannot be incorporated within structural dynamics based on past observations. This has resulted an attempt at some further adaptation of the model to make it as flexible as possible.

R.Stone firstly, suggested the introduction of adaptive committed quantities and varying propensities to consume. The B_i represent in fact in one sense, the "intensity" of the consumer preference for each kind of expenditure. A.Deaton (45) underlines the importance of giving flexibility to the marginal propensities to spend Bi. The easiest solution is to write B_i as a linear temporal trend (as Deaton does) In our case this approach did not help to solve the afore-mentioned problem. Bi have instead been linked to the information arising from the knowledge of past shares of expenditure. The marginal propensities to spend have then been presented in the form of a two period moving average of past budget shares. The demand functions which have been derived as usual take the following mathematical form:

$$(3.8) \qquad p_i x_i = p_i (g_i^1 + g_i^2 z_i) + (B_i^1 + B_i^2 w_i^*)[m - \sum_k p_k (g_k^1 + g_k^2 z_k)]$$

for i= 1 to n

where $z = \dfrac{x_{i(t-1)} + x_{i(t-2)}}{2}$

and $w_i^* = \dfrac{w_{i(t-1)} + w_{i(t-2)}}{2}$; $w_i = \dfrac{p_i x_i}{y}$

where $w_{i(t)}$ are the budget shares at period t

The estimated parameters which have been obtained by means of the usual econometric procedure described in 2.2, are shown in Tables II.6, II.7. First of all one can note that the Betas are very stable for **Durables**, **Non-durables** and **Female leisure**. **Food** and **Male leisure** have, on the contrary quite unstable marginal propensities and they compensate each other. In short it seems that the Italian representative household, while maintaining fixed preferences for the first three items, allocates its full income reducing and expanding food expenditure in contrast to male leisure. The habit effects embodied in all the committed quantities are still statistically significant

Table II.7 :Estimated parameters of the dynamic ELES of Italian households (1964-80) (Varying marginal propensities to spend and committed quantities with proportional habit formation)

$$g_i z_i = \frac{1}{2} g_i [x_{i(t-1)} + x_{i(t-2)}]$$

Items	Gamma	D.W.	R
Durables	0.304 (2.09)	1.83	.89
Non-durables	0.754 (8.44)	2.46	.89
Food, beverages tobacco	0.591 (4.49)	1.28	.87
Male leisure	0.360 (2.90)	2.30	.37
Female leisure	0.462 (5.07)	2.37	.11

R is the correlation coefficient of fitted and actual per-cent rates of growth of consumption at constant prices.

Table II.8 Marginal propensities to spend. (1966-80)

$$\beta_i = (\beta_i^1 + \beta_i^2 w^*_i)$$

Years	Durables	Non-durables	Foods, etc.	Male leisure	Female leisure
1966	.230	.309	.317	.087	.056
1967	.230	.308	.255	.150	.057
1968	.230	.307	.204	.202	.057
1969	.230	.309	.246	.158	.056
1970	.230	.309	.275	.129	.057
1971	.230	.311	.195	.208	.056
1972	.230	.315	.164	.235	.055
1973	.230	.312	.219	.189	.056
1974	.230	.317	.268	.128	.056
1975	.230	.311	.268	.134	.056
1976	.230	.312	.280	.121	.056
1977	.230	.313	.288	.112	.056
1978	.230	.313	.281	.120	.056
1979	.230	.312	.294	.106	.056
1980	.230	.312	.286	.115	.056

but have been noticeably lowered. With all the caution that such higly stylized models deserve, one should interpret, such results from an economic viewpoint, by noting that the representative Italian household appears to have strong habits as regards its expenditure in **Services**, **Semi-durables** and **Non-durables** (broadly speaking called **Non-durables**). This behaviour is reasonable because many items of this branch are not very sensitive to changes in relative prices (for instance, health, education, transport, housing, fuel, etc.). **Food and beverages** show a medium intensity of habit effects because a share of them are not primary necessities. **Durables** which traditionally are the branch with more luxury features have the lowest habit effect. This means that their supernumerary quantities are proportionally larger than those of the remaining goods. The elasticity to their own price is thus the highest. **When marginal propensities vary female and male leisure** appear, less linked to habits.

Concerning the marginal propensities to spend, one can interpret the results by pointing out that the great stability of **Durables** is probably due to the great importance attributed to such commodities in the standard of living today. Their growth is strictly related to income growth and their purchasing can only be influenced by the relative price which can delay their demand for substitution. In the same way **Female leisure** is linked to full household income. **Male leisure** and **Food** on the contrary do not show this rigid connection with full income, even though during the last few years such propensities seem to have returned to less irregular patterns

2.7 Conclusions

From the econometric exercises which have been carried out one arrives at the conclusion that, even at the price of high abstraction the choices concerned with consumption and labour supply of the representative household can be treated within the neoclassical framework of utilitarian maximising behaviour.

Once more one must conclude that there are no unique answers to the issue. Apart from the vagueness of the quantitative identification of the phenomena which have been studied, there is another important problem related to the arbitrary choice of the structural model. The static ELES even if simple and coherent in its results is unsatisfactory. On the other hand the dynamic version of such a model altogough it introduces slightly more realism into formal model-building is open to criticisms of "ad hoc" specification. As has been shown, in fact, there are many possible alternatives which greatly change the numerical results. But above all the dynamic models are still based on endogenous habits or stock formation mechanisms. One must draw attention instead to the weight that exogenous factors can play in determining consumer-workers' preferences. Advertising, social relations, generational waves, etc. are determinants that can explain sudden or apparently irregular trends. The neoclassical approach is potentially open to such amendments and refinements. But before such measures are taken, it is important to find new means to correctly measure "leisure" in all its aspects and within the context of the household. At the present state of development of the discipline, however, it is only possible by means of a general approach to search through for further confirmations of the connection between consumption and working activity leaving aside any other normative suggestions for labour and economic policies.

APPENDIX II.1 A simple scheme of an intra-family allocative model of leisure and consumption

This section presents a simple scheme of an intra-family utilitarian allocation of working burdens between male and female members of the same family. As is well known female behaviour toward working activity is strongly influenced by the alternative between paid working activity and home production. It should be emphasized that many elements are involved in female choices besides wage-rate dynamics (See C.Chiswick (37) C.Clark (38), W.L.Gramm (68), R.Gronau (72)). But the simplest way to treat such a question could follow these lines.

Let us take a family of two components: a male and a female. Let us suppose that only the woman is interested in home production. Her production function has the agreeable property of decreasing returns (which seems even more obvious than that of increasing returns). When the woman's home production and market activity and the man's market activity are combined, the household's budget constraint takes the form of surface 0 in figure A1.

Given constant hourly wages w_f, w_m, home production stops when the marginal home product is equal to the hourly wage (or reservation wage). (This happens when point F is reached).

The household's preferences are expressed through indifference surfaces. Given opposite convexities for the budget and indifference surfaces, a unique equilibrium point P exists where the family maximises its own utility. This point (which usually falls on the interior of the budget surface) could also describe four extreme (or corner) situations

i) At point 0 income is given by the sum of the maximum money income. The man and woman do not enjoy leisure at all. The woman divides all her time between paid work and home production.

ii) At point B neither the man nor the woman work. They live on pure non-labour income and home production does not take place (they buy substitutes for home products on the market).

iii) At point A only the woman works and she does not have any leisure at all.

iv) At point C only the man works as much as possible and the wife does not work at all, neither outside nor inside the home.

Another possible situation is that described by point P' on the curved share of the surface 0. The man works and enjoys some leisure. The woman spends her time in home production and leisure.

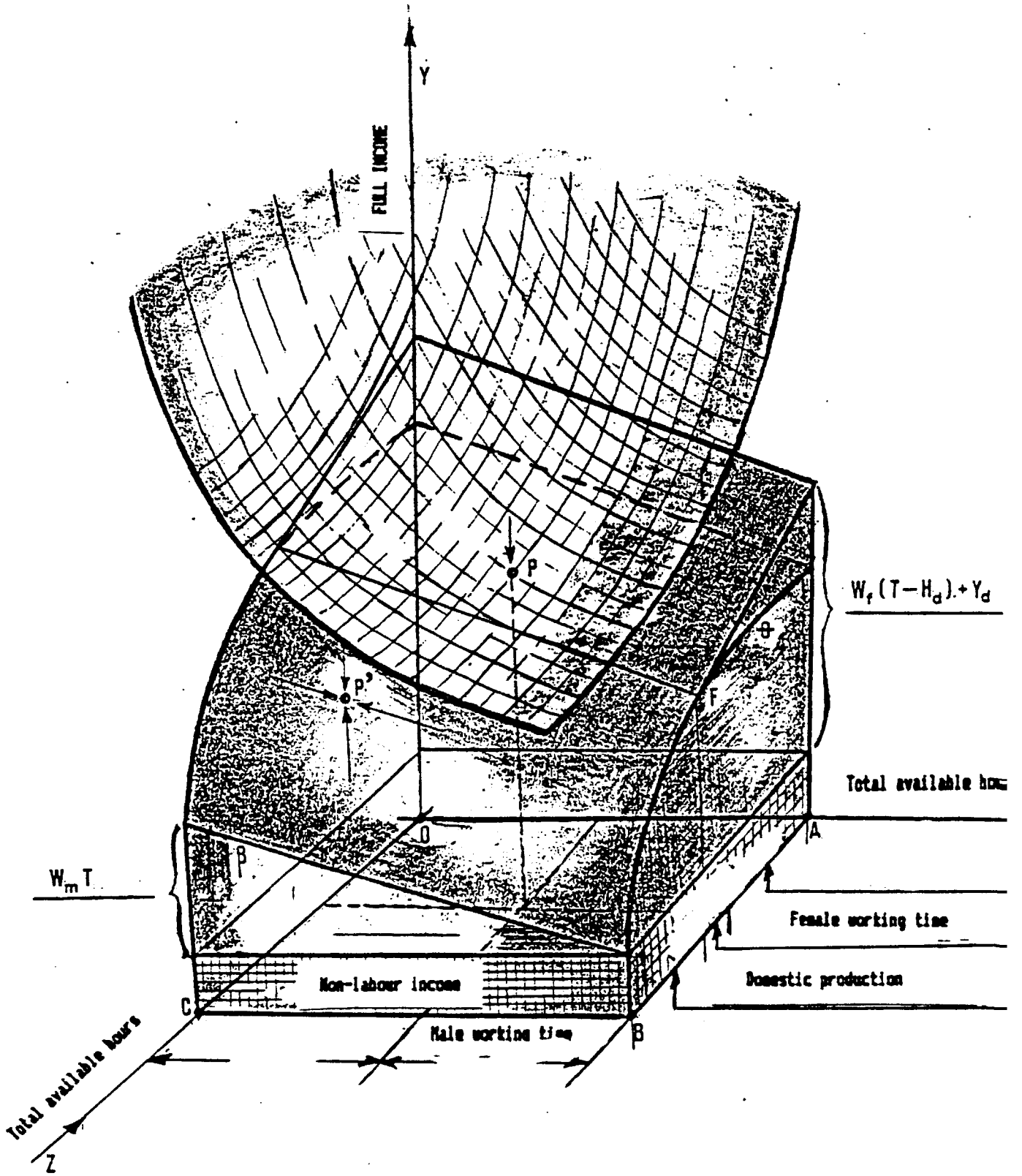


FIG.A.1:Allocative scheme of consumption and leisure of a representative household

Appendix II.2 Data and statistical sources

The econometric estimation of an expenditure system applied to National Accounts time series, requiresthe rejection of a directly and simoultaneously measured price of labour and individual labour supply (working hours). The usual and unavoidable solution is to take as a proxy of labour supply, the working hours of the industrial sector and (for the price of labour) the hourly wage of the same sector.

This study concerns male and female labour supply so that at least a rough distinction of data for sexual groups is necessary (and possible). As a matter of fact the use of EUROSTAT data on working hours and wages can partly solve this exigency.

By exploiting and combining the information about weekly working hours in three sectors (agriculture, industry and services) classified for men and women it is therefore possible to calculate a weighted average of the global weekly working hours, of the entire national economy. Then:

$$h_{tf} = h_{ag} * \frac{E_{agf}}{E_{tf}} + h_{in} * \frac{E_{inf}}{E_{tf}} + h_{se} * \frac{E_{sef}}{E_{tf}}$$

and

$$h_{tm} = h_{ag} * \frac{E_{agf}}{E_{tf}} + h_{in} * \frac{E_{inf}}{E_{tf}} + h_{se} * \frac{E_{sef}}{E_{tf}}$$

where ag means agriculture; in means industry and se, services. h_t is the national economy's equivalent of weekly hours. E is full time employment (The presence of part-time and underemployed workers is taken in-to account in the computation of the average working hours of each sector).

Given the absence of homogeneous historical data on the number of yearly working weeks, it is necessary to choose an indirect measure of them. Let us assume that the hourly wage of the industrial sector w_{in} is a reliable proxy of the general composite hourly wage (that is to say that changes in the intersectorial productivity ratios have been negligible in the period taken into account, or that wage differentials have remained constant). It is then possible to present a simplified formula for the total amount of wages.

Let W_t be the after-tax-wage-fund of the economy

$$W_{ti} = h_{ti} * w_{ini} * E_{ti}$$

for each sexual group i=m,f.

Hence under these assumptions, the number of working weeks is given respectively by

$$N_{wwf} = \frac{Wf}{h_{tf} * w_{inf} * E_{tf}}$$

and

$$N_{wwm} = \frac{W m}{h_{tm} * w_{inm} * E_{tm}}$$

However W_t and W_{tm} are not known and a further simplification is therefore necessary. By demanding that $N_{ww}f = N_{ww}m$ and adding up both sides of (.) it follows that:

$$N_{ww} = \frac{W_tf + W_{tm}}{(h_{tm} * w_{imm}) E_{tm} + (h_{tf} * w_{imf}) E_{tf}}$$

To suppose that men and women work the same number of working weeks is certainly not satisfactory. It has been demonstrated in fact that labour supply elasticity to wages is different when measured in hours and in weeks (See G.Hanoch (77)).

Women usually enjoy special vacations for motherhood etc. But there are at present no solutions to allow us to introduce such refinements. One will suppose that the effective working time satisfies the equivalence between yearly working hours and yearly working weeks. Figure II.5 shows the trend of the working weeks calculated in this way, for Italy.

The result is reasonable. The presence of widespread female under-employment during the 60's, produced a low number of working-weeks which seems to have stabilized at the end of the 70's.

The second problem is that of the maximum feasible working hours. Barnett (7) hypothesized for the American workers a maximum of 9 hours for 6 days a week. This figure is certainly excessive for the Italian labour market and there are no a priori reasons to choose 60 or 48 hours.A grid-search to verify which figure better satisfies the statistical tests appears more appropriate.

The amount of male and female leisure thus results as:

$$g_{hm} - hm = Lm$$

$$g_{hf} - hf = Lf$$

All the per-capita variables are computed with respect to the number of households.

CHAPTER III

A COMPARATIVE STUDY OF THE ALLOCATIVE CHOICES OF CONSUMPTION , SAVING AND LEISURE IN SIX EUROPEAN COUNTRIES

3.1: Introduction

This chapter has essentially empirical aims. Economic literature has recently been enriched by several contributions concerning the theory of demand, but applied works which specially focus on National Accounts data are relatively scarce. Yet, demand system estimates are very sensitive to different econometric specifications and to the choice of different statistical samples.

Economic theory itself does not have the last word on the correctness of such models and empirical results cannot definitely discriminate among them. Every econometric specification shows in fact weak points that undermine theoretical elegance and coherency. Thus the Rotterdam system (especially when it is applied to more then 5-6 items) seldom respects all the necessary conditions which ensure the coherence of the consumer's preferences (homogeneity, symmetry and negativity properties). The attempt "to make numbers talk for themselves" avoiding, at the same time, abstract assumptions in modelling consumers' preferences is only partly successful. We must recall however, once again, the theoretical conclusions of Sonnenschein on the irrelevance of such conditions at the aggregate level. The LES in the static version seldom respects the budget constraint over the entire sample; often its results are affected by the presence of autocorrelation and heteroschedasticy. The Dynamic LES often shows incongruent results in habit and stock effects and unrealistic values for some of its parameters. Other approaches are affected by similar problems. Therefore the choice of a particular specification is only justified by the aims of the applied research.

In this study an advanced version of the LES has been chosen for several reasons. The first is that **estimates of the LES are simple**, so that they can largely be applied to comparative studies. The second is that **its empirical results are generally good**. The third is that the **more elaborate version can embody interesting effects**, dynamic preferences, complementarity among goods, etc.

As will be shown in what follows a Twice Enlarged Linear Expenditure System (TELES) is a good means of deriving some empirical information on the average consumers' preferences from aggregate national data.

3.2: Theoretical foundations of the TELES.

The TELES implies that, **by assuming strong separability of saving and consumption**, it is possible to solve the intertemporal problem of utility maximization by means of the usual allocative models of aggregate consumption among different categories of goods. Saving in fact represents future consumption of goods and services.

An intertemporal utility function however implies several restrictions: i) **Expectations are supposed to be held with certainty**, even though **perfect foresight is not necessary**. ii) **Capital markets are perfect, likewise second-hand markets of durable goods**. In other words the consumer-worker can replan his expenditure programs at discrete intervals

C.Lluch (101) has formalized the problem as follows.

Problem: choose the vector of demanded quantities of goods $q(t)$ on the temporal set $0 \leq t \leq \infty$ to maximize:

$$(3.1.1) \qquad \int_0^{\infty} e^{-\delta t} u(x_{(t)})\, dt$$

given the budget constraint:

$$(3.1.2) \qquad \dot{W}_{(t)} = \varrho\, W_{(t)} + a_{(t)} - p' x_{(t)}$$

where x(t) is the (n * 1) vector of the demanded quantities; p is the (n*1) vector of exogeneous prices; $W_{(t)}$ is non human wealth; $a_{(t)}$ is the exogenous (scalar) flow of labour income; ϱ is the rate of growth of the non-human wealth; δ is the subjective discount rate of the representative consumer.

Lluch has pointed out that at t = 0 the solution of the problem corresponds to that of the usual static expenditure system. The necessary conditions for the optimal plan to maximise the intertemporal utility function are:

$$(3.2.1) \qquad u_{(x_{(t)})} = \lambda e^{(\delta-\varrho)t} p \quad \text{for } 0 \leq t \leq \infty$$

$$(3.2.2) \qquad W + L(I) = p' L(x)$$

where u_w is the vector of marginal utilities of each good and λ is the implicit valuation of saving, L(I), L(x) are the present values of the relative variables.

In each period following the first one the consumer replans his intertemporal allocation and his choices are expressed through the basic system of differential equations:

$$(3.3) \qquad \dot{x}_{(t)} = \lambda(\delta-\varrho)\, e^{(\delta-\varrho)t}\, H^{-1}_{(t)}\, p$$

where $H^{-1}_{(t)}$ is Hessian of the utility function.

By imposing a specific form of the utility function, i.e. that of Stone-Gearv.

$$(3.4) \qquad u(x_{(t)}) = B' \log (x_{(t)} - g)$$

The system (3.3) takes the form:

(3.5) $$\dot{x}_{(t)} = (\delta - \varrho)\ (x_{(t)} - g)$$

which after integration gives the conditions.

(3.6) $$\beta = \frac{\lambda p}{(q^{\wedge} - g^{\wedge})}$$

(3.7) $$v = p'q = (1 - \frac{\delta}{\varrho})\ p'g + \frac{\delta}{\varrho}\ z$$

where $z = \varrho w + a + L(\dot{\hat{m}})$ and takes the meanings of permanent income and λ is the implicit evaluation of leisure.

The TELES, looking at (3.7), thus appears similar to the static LES, the only difference being that the ratio δ / ϱ assumes the meaning of propensity to consume income. Permanent income z includes the expectational term $L(\dot{m})$ which concerns future labour income.

The final solutions of equation (3.3) are:

(3.8) $$\lambda = \frac{1}{\frac{\delta}{\varrho}\ (z - p'g)}$$

and

(3.9) $$p^{\wedge}x = pg^{\wedge} - \frac{\delta}{\varrho}\ \beta\ (z - p'g)$$

H.Howe has pointed out that equation (3.9) can easily be interpreted to embody saving as an added good. In fact:

(3.10) $$s = z - v = (1 - \frac{\delta}{\varrho})(z - p'g)$$

But (3.10) has a form which is fully compatible with the LES if a) one takes the parameter $\beta_s = (1 - \frac{\delta}{\varrho})$

as a propensity to save and b) one assumes the preallocated quantity of saving equal to zero and c) the discount rate less than the rate of growth of wealth so that $B_s < 1$.

Howe has further proposed to forsake permanent income in empirical studies in favour of current income $m = \varrho W + m_t$ without loss of generality. The TELES is therefore subject to empirical estimates of its parameters without further complexities.

A.Tulpule' (182) has enlarged the system to include the consumption of leisure or its complement the individual labour supply, by simply re-interpreting the budget constraint in terms of full income.

3.3: A two-stage allocative model of consumption, saving and leisure.

The model presented in what follows is simple, but its formal presentation could be cumbersome. It will therefore be illustrated separately for each step of its formal construction.

Several authors have demonstrated that the ~~strong~~ restrictions of the LES models can be partly avoided by simply modifying some basic assumptions. An S-branch utility tree in fact subsumes the linear expenditure specification as a special case, but at the same time permits the introduction of complementarity among goods and services without excessive costs in terms of complexity. Strotz (171) and Gorman (63) have shown that it is possible to suppose that the maximization of such a utility tree can be accomplished by solving a two stage decision problem: i) first, the representative consumer allocates his expenditures among large groups of homogeneous goods (branches); ii) second, he allocates the branch expenditure among subgroups (or items) of goods and services.

A.Brown-D.Heien (30) have given a good illustration of the theoretical premises of such a generalized LES and the interested reader can find a detailed digression in their paper. The utility function is based on Sato's generalization of the CES production function, which assumes a partition of the n goods into S subsets of n_s commodities ($1 \leq s \leq S$). This function implies weak separability. In other words the marginal rate of substitution for commodities of different branches does not depend upon quantities of any good outside their two group. Therefore the traditional Stone-Gearv LES which implies separability and additivity is a nested specification of the S-branch system.

The model presented here, embodies furthermore the afore-mentioned theoretical contributions that explain saving and leisure as further different branches of consumption. These two branches compete with branches of "true" consumption at the higher stage of the allocative process.

Formally the afore-mentioned multistage maximizing process can be described as follows:

Stage I

$$U(x) = \prod_i (x_i - g_i)^{\beta_i} \tag{3.11}$$

$$= \sum_{(i=1)}^{n} B_i \log (x_i - g_i)$$

for k=1 to n groups.

The LES at the first stage has the following form:

$$x_i = g_i + \frac{B_i}{p_i} (y - \sum_{(m \in k)} p_i g_i) \qquad (\forall i \in k) \tag{3.12}$$

Stage II

In the second stage the representative consumer maximizes a partial utility function, whose arguments are the shares of goods which exceed the preallocated quantities.

$$U(x) = \Pi_k \left(\frac{a_k}{P_k} - c\right)^{b_k} \tag{3.13}$$

for k =1 to n

Where P_k represents a composite index of the price of the group:

$$P = \Pi_i \left[\frac{P_i}{B_i}\right]^{B_i} \tag{3.14}$$

and a represents the supernumerary income for each group: (NOTE 1)

$$a_k = (y_k - \sum_{(m \in k)} p_a g_a) \tag{3.15}$$

In the second stage the budget constraint becomes:

$$(3.16) \qquad \sum_k y_k = y$$

Total utility is therefore given by substituting (3.11) in (3.13) :

$$(3.17) \quad U(x) = \Pi_k (\Pi_i (x_i - g_i)^{B_i} - c_k)^{b_k}$$

The expenditure functions can be written:

$$(3.18) \qquad p_k m_k = p_k c_k + b_k (y - \sum_s p_s c_s - \sum_s \sum_{(j \in s)} p_j g_j)$$

and the expenditure functions for each item become:

$$(3.19) \qquad p_i x_i = p_i g_i + B_i [p_k c_k + b_k (y - \sum p_s c_s - \sum\sum p_j g_j)]$$

3.4 Introducing habit and stock effects

By recalling the observations of Chapter II on dynamic expenditure models several solutions to introduce habit and stock effects are available. The basic idea from which they have been derived is due to Gorman (67). An

---

(NOTE 1) in our twice enlarged version:

$$(3.11) \qquad p_i x_i = p_i g_i + B_i (m - \sum_{(i=1)}^{n} p_i + g_i + w g_n)$$

$$Sa = B_a (m - \sum_{(i=1)}^{n} p_i g_i + w g_n)$$

$$-wh = -w g_n + B_i (m - \sum_{(i=1)}^{n} p_i g_i + w g_n)$$

The extension of the ELES to leisure consumption follows the approach of Abbott-Ashenfelter (1) and Tulpule' (172). In this way, it is possible to avoid an a priori definition of the maximum feasible working hours g_n.

---

individual consumer has a utility function:

(3.21) $U=u(x,\alpha)$

that depends upon a commodity bundle $x=(x_i)_i \setminus(i \setminus(n(x \in X)$ and on a taste parameter $\alpha=(\alpha_j)_j \setminus(j\setminus(m (\alpha \in A)$.
The function u is : (1) differentiable in (x,α); (2) strictly increasing and strictly quasi-concave in x on $X * A$. In any given state of taste $\alpha \in A$, then $x \in X$ is chosen at prices p and income y. So that

$$(3.22) \qquad \frac{\partial u}{\partial x_i}(x,\alpha) = \lambda p_i \qquad \sum p_i x_i = y$$

In the long-run tastes depend on past consumption and $\alpha_j=\alpha_j(x)$
If these functions are differentiable in X and map X into A or a subset of it then the former equation defines the long-run equilibria . Pollack-Wales have suggested some simple and easily interpretable solutions from the economic point of view. Two of their specifications have been tested . The first one is that relating to the introduction of a linear trend within the committed quantities. The second one is that of committed quantities seen as a linear function of past levels of consumption.

Under these assumptions the parameter g_i can be written as follows:

$$(3.23) \qquad g_i = g_i^1 + g_i^2 z \qquad ; \qquad c_k = c_k^1 + c_k^2 z$$

$$(3.24) \qquad p_i x_i = p_i (g_i^1 + g_i^2 z) + \beta_i [P_k (c_k^1 + c_k^2) +$$

$$+ b_k (y - \sum_s P_s (c_s^1 + c_s^2 z) - \sum_{(j \in \omega)} \sum p_j (g_j^1 + g_j^2 z)]$$

where z is the variable representing habit or stock effects. The static LES is therefore a "nested" model of the last one when one assumes that z is equal to zero over the entire period investigated.

After having rewritten the entire system in terms of the twice enlarged utility function, an econometric procedure can be applied to estimate (under particular statistical hypotheses) the parameters of the system. Yet to make possible such estimates a further digression is necessary. Given the definitions:

(3.25) $C = \sum_{(i=1)} p_i x_i$ (private consumption at current prices)

$y = C + Sa$ (disposable income)

$M = y - wh$ (non-labour income)

$Y = C + Sa + w\,(g_h^1 + g_h^2 z - h)$ (full income)

(1) one can derive the expressions of non-labour income which have to be allocated among the different commodities:

(3.26) $C + Sa - wh = Y - w\,(g_h^1 + g_h^2 z) = M$

(2) By grouping goods and services into two branches according to the following scheme:

Ist Stage

Ist Group:

a) Foods, beverages and tobacco
b) Clothing
c) Housing
d) Health

IInd Group:

e) Furniture
f) Transport
g) Recreation
h) Others

The problem analyzed in this study has been reduced to the following: (3.27.1)

Max. (3.4.1) subject to $y^1 = \sum_{(i=1)}^{4} p_i x_i$

or: $$p_i x_i = p_i(g_i^1 + g_i^2 z) + B_i[y^1 - \sum_{(m=1)}^{4} p_m (g_m^1 + g_m^2 z)]$$

for i = 1 to 4

Max. (3.4.1) subject to $y^1 = \sum_{(i=5)}^{8} p_i x_i$

or:(3.27.3) $$p_i x_i = p_i(g_i^1 + g_i^2 z) + B_i[y^1 - \sum_{(m=5)}^{8} p_m (g_m^1 + g_m^2 z)]$$

for i = 5 to 8

IInd Stage

Max.(3.4.2) subject to $Y = M + w\,(g_h^1 + g_h^2 z)$

or:

(3.28.1) $$P^1{}_m{}^1 = \prod_{(i=1)}^{4} \left(\frac{P_i}{B_i}\right)^{B_i} [y^1 - \sum_{(i=1)}^{4} p_i (g_i^1 - g_i^2 z)]$$

$$= P^1 c^1 + b^1[M + w\,(g_h^1 + g_h^2 z) - \sum_{(s=1)}^{2} P_s (c_s^1 + c_s^2 z) -$$

$$- \sum_{(s=1)}^{2} \sum_{(j \in s)} p_j (g_j^1 + g_j^2 z)]$$

(3.28.2) $$P^2{}_m{}^2 = \prod_{(i=5)}^{8} \left(\frac{P_i}{B_i}\right)^{B_i} [y^2 - \sum_{(s=1)}^{2} p_i (g_i^1 - g_i^2 z)]$$

$$= P^2 c^2 + b^2[M + w\,(g_h^1 + g_h^2 z) - \sum_{(s=1)}^{2} P_s (c_s^1 + c_s^2 z) -$$

$$- \sum_{(s=1)}^{2} \sum_{(j \in s)} p_j (g_j^1 + g_j^2 z)]$$

3.5 On the cross and own price elasticities of a multistage TELES

The Multistage Dynamic TELES shows the property of admitting complementarity among items of the same branch and between items of different branches as well. This can be easily demonstrated by simply examining cross price elasticities. By differentiating equations (3.28.1),(3.28.2) in respect some price, one obtains two different expressions for the two distinct cases: (a) when the two items belong to the same branch; (b) when the two items belong to different branches.

Slutskij's terms.

(a) For i, j E k

$$(3.29.1)\quad \frac{B_i}{p_i}\frac{B_j}{p_j} q_k c_k - \frac{B_i}{p_i}\frac{B_j}{p_j} b_k q_k c_k + \frac{B_i}{p_i} b_k (x_j - g_j)$$

(b) For i E k ; j E s

$$(3.29.2)\quad \frac{B_i}{p_i}\left[\frac{B_j}{p_j} b_k c_s q_s + b_k (x_j - g_j)\right]$$

Non compensated elasticity

(a) For i, j E k

$$(3.30.1)\quad \frac{p_j}{x_i}\frac{\partial x_i}{\partial p_j} = B_i \frac{B_j (1 - b_k) q_k c_k - p_j g_j}{p_i x_i}$$

(b) For i E k ; j E s

$$(3.30.2)\quad \frac{p_j}{x_i}\frac{\partial x_j}{\partial p_j} = \frac{B_i B_j q_k q_s c_s}{p_i x_i} - \frac{B_i b_i p_j g_j}{p_i x_i}$$

Given that the committed quantities at the higher stage are subject only to the constraint $c < x$, they can also assume a negative sign (this is the case for luxuries) and if their value is large enough in absolute terms they can dominate the remaining positive terms so that the Slutsky term could be negative (which means complementarity between the two goods)

Compensated elasticity to wage

$$(3.31.1) \qquad \frac{w}{x_i} S_{ih} = \frac{B_i}{p_i x_i} b_k H w - \frac{B_i b_k}{p_i x_i} hw$$

Non-compensated elasticity to wage

$$(3.31.2) \qquad \frac{w}{x_i} \frac{\partial x_i}{\partial w} = B_i \, b_k \, \frac{Hw}{p_i x_i}$$

The elasticity of group or (as in the models presented here) of single items which enter the utility function at the second stage take the usual form of the LES. Labour supply elasticities in particular are calculated as follows:

Uncompensated labour supply's elasticity

$$(3.32.1) \qquad \frac{w}{h} \frac{\partial h}{\partial w} = -1 + (1 - B_h) \frac{H}{h}$$

Compensated labour supply elasticity

$$(3.32.2) \qquad -\frac{w}{h} S = (1 - B_h) \frac{H - h}{h}$$

From an empirical point of view it is important to underline that the criteria adopted to aggregate the single items within branches strongly conditions the empirical results. As a matter of fact both complementaryty and substitubility relationships depend upon the sign of c (committed quantities at the higher stage) which in turns depends upon the composite branch prices and the preallocated quantities. of the single items. In our tests goods and services have been aggregated on the basis of a rough evaluation of their basic nature. Thus the first branch should be that of low elastic commodities to their own price. The second one includes those goods and services of superior nature that is to say, durable goods and consumption of services which are linked to high standards of living (recreation, tourism, education, travel, etc.). Those kinds of commodities usually show higher elasticities to their own prices. It must be underlined, in any case, that there is no reason a priori (except common sense) to choose a particular repartition of the branches of consumption. This however permits us to give a partial answer to the most frequent criticisms of the LES which, in its original form, imposes a priori substituibility among goods.

3.6: Data and statistical sources

The statistical data which have been utilized for these exercises are those collected for the OECD Detailed National Accounts. The models have been written in terms of per-capita expenditures by dividing consumption at current prices by the number of employed workers. The deflators of each single item have been utilized as price variables and they have been calculated as the ratio of consumption at current and constant prices. The series concerning employment, and working hours are those reported by the Yearbooks of the ILO. The data range from 1960 to 1980 and for France from 1962 to 1980.

Given that a direct measure of the hourly wage of the entire economy does not exist, the usual solution of computing the average hourly wage by dividing the total amount of wages and salaries by the number of employed workers has been adopted. This yearly wage has been corrected by subtracting a share absorbed by taxes on personal income and by dividing this amount for a fixed number of weeks (48) and for the average working hours of the manufacturing industry. This solution which extends the working hours in manufacturing to all the productive branches certainly introduces a bias within the computation of the labour supply of a country. But given that some experiments to compute in a more sophisticated way the effective hours supplied (in agriculture and in services) have not substantially altered the results of the demand system here adopted, they have been abandoned. It is preferable not to introduce too many manipulations of the data that could generate the suspicion of "ad hoc" adjustments to the bad functioning of the models.

To give a first impression of the structure of private consumption in the six European countries which have been compared, the following figures illustrate the trends in the budget shares (at current prices) of each item of consumption during the period 1960-1980.

ECONOMETRIC METHODS The equation of the system have been written in terms of first differences and corrected for the presence of heteroschedasticity as suggested by H.Theil (172). The model is described in Chapter II paragraph 2.3. All the models have been estimated by means of the Full Information Maximum Likelihood procedure of the TSP statistical package.

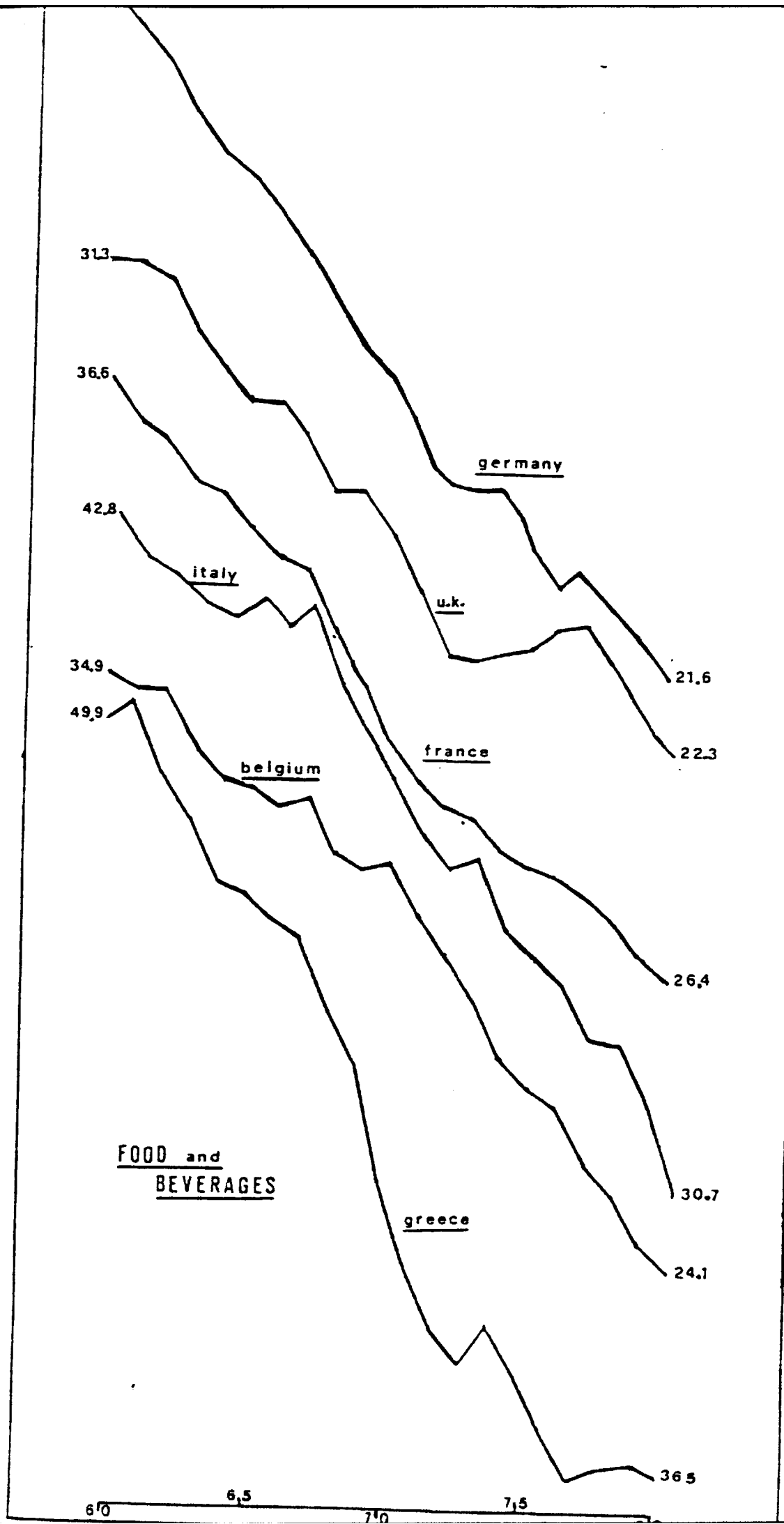


FIG. III.1:A comparison of the budget shares (at current prices) of the six European countries.

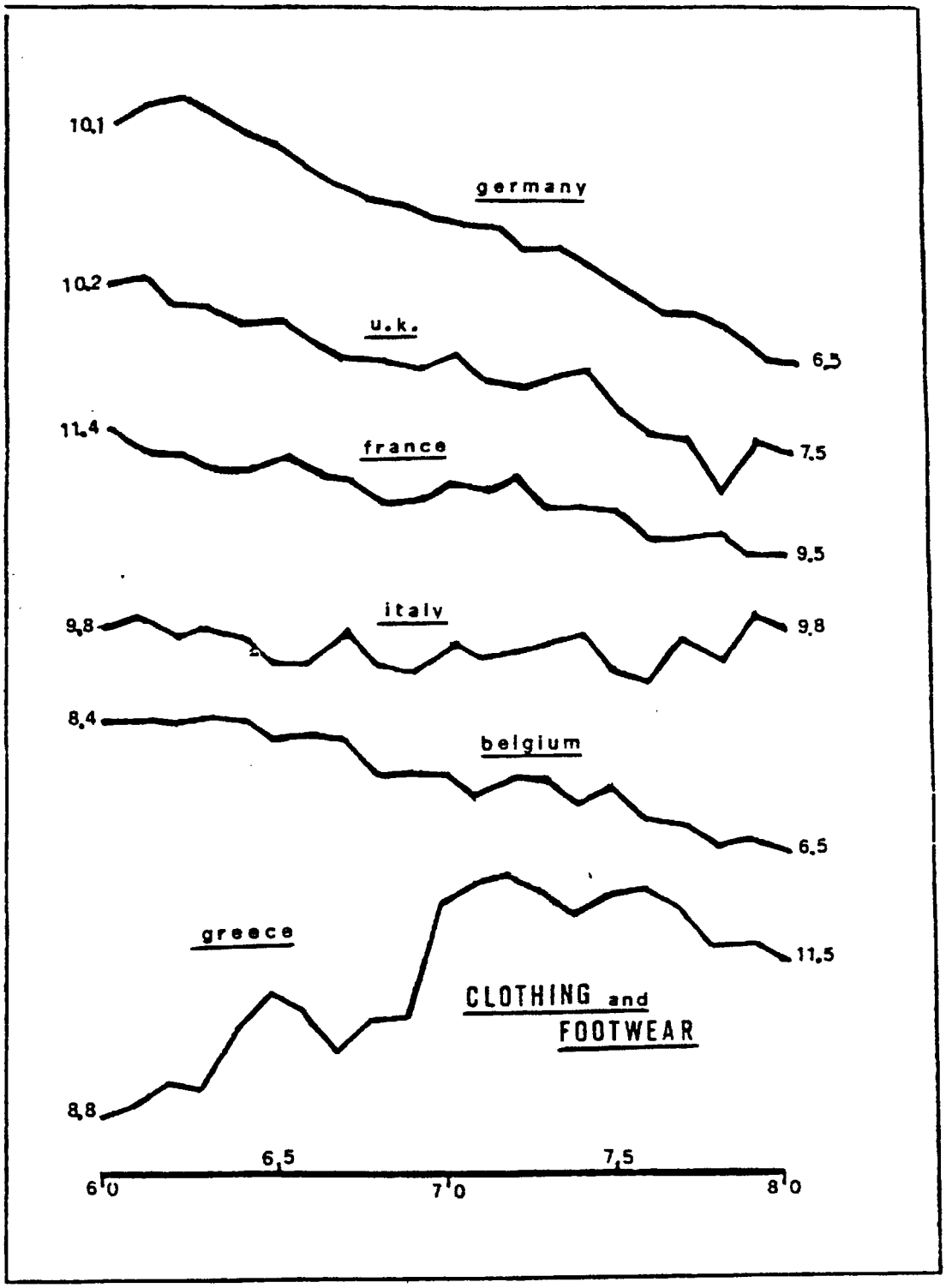


FIG. III.2: A comparison of the budget shares (at current prices) of the six European countries.

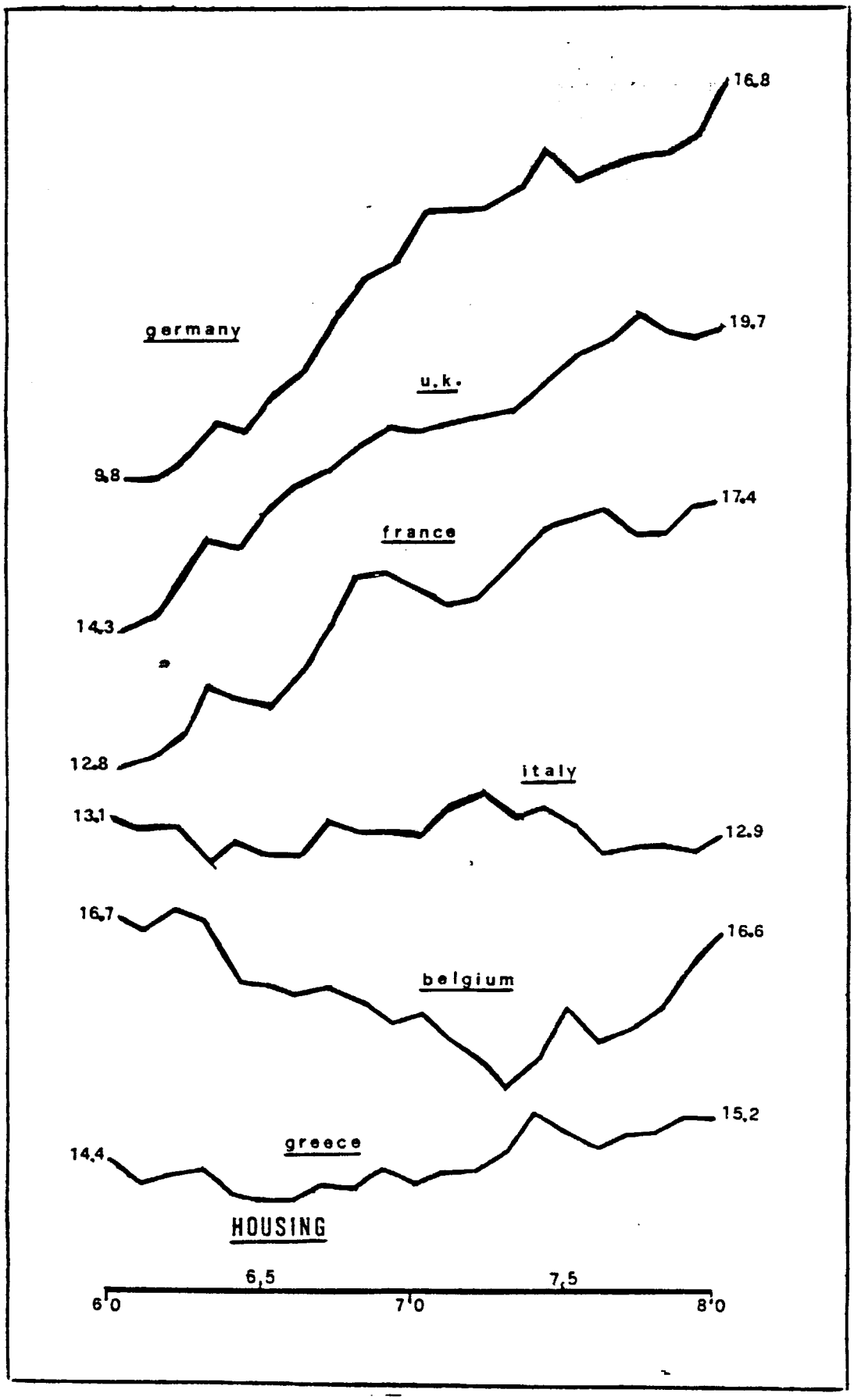


FIG.III.3:A comparison of the budget shares (at current prices) of the six European countries.

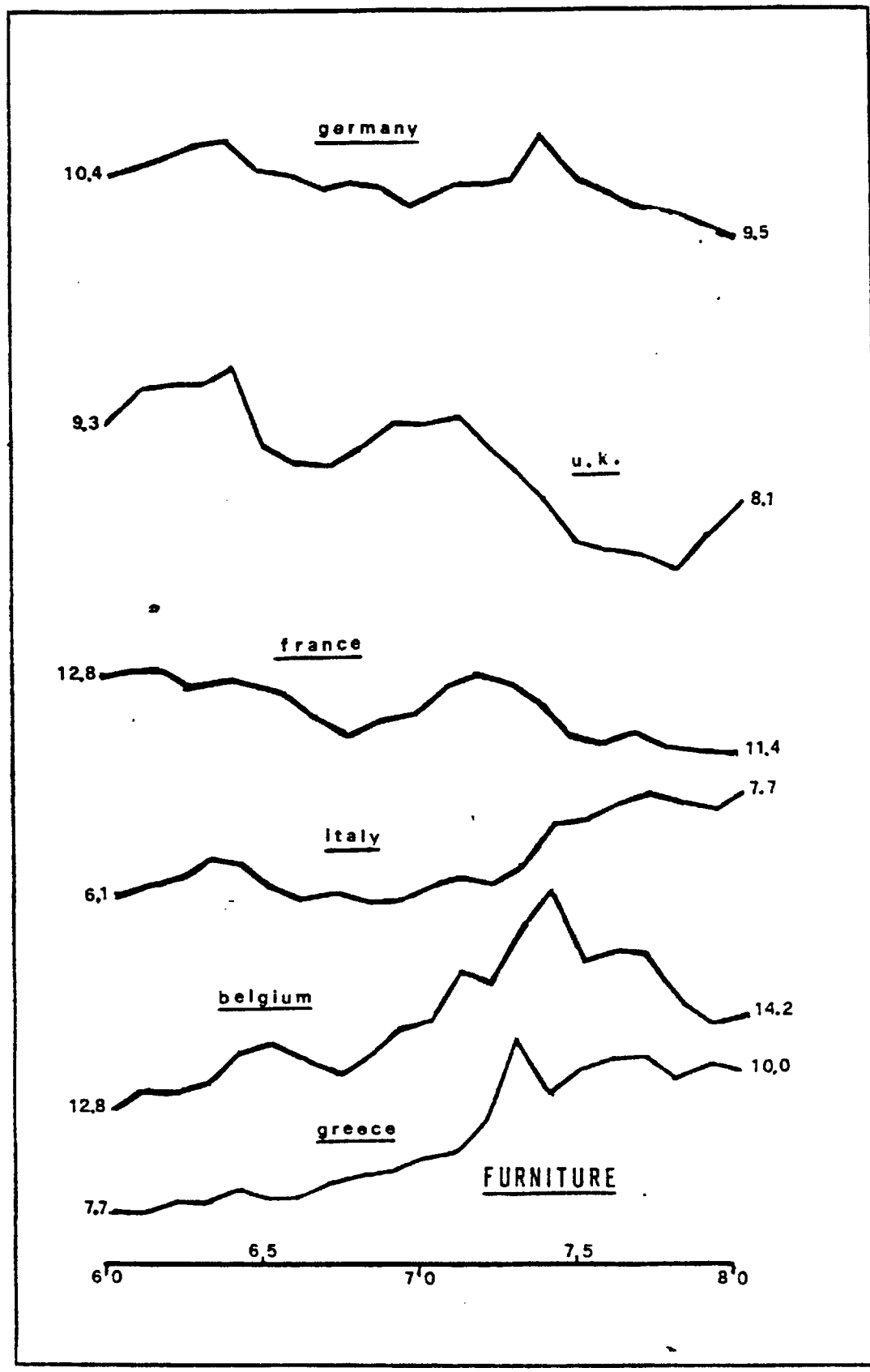


FIG.III,4:A comparison of the budget shares (at current prices) of the six European countries.

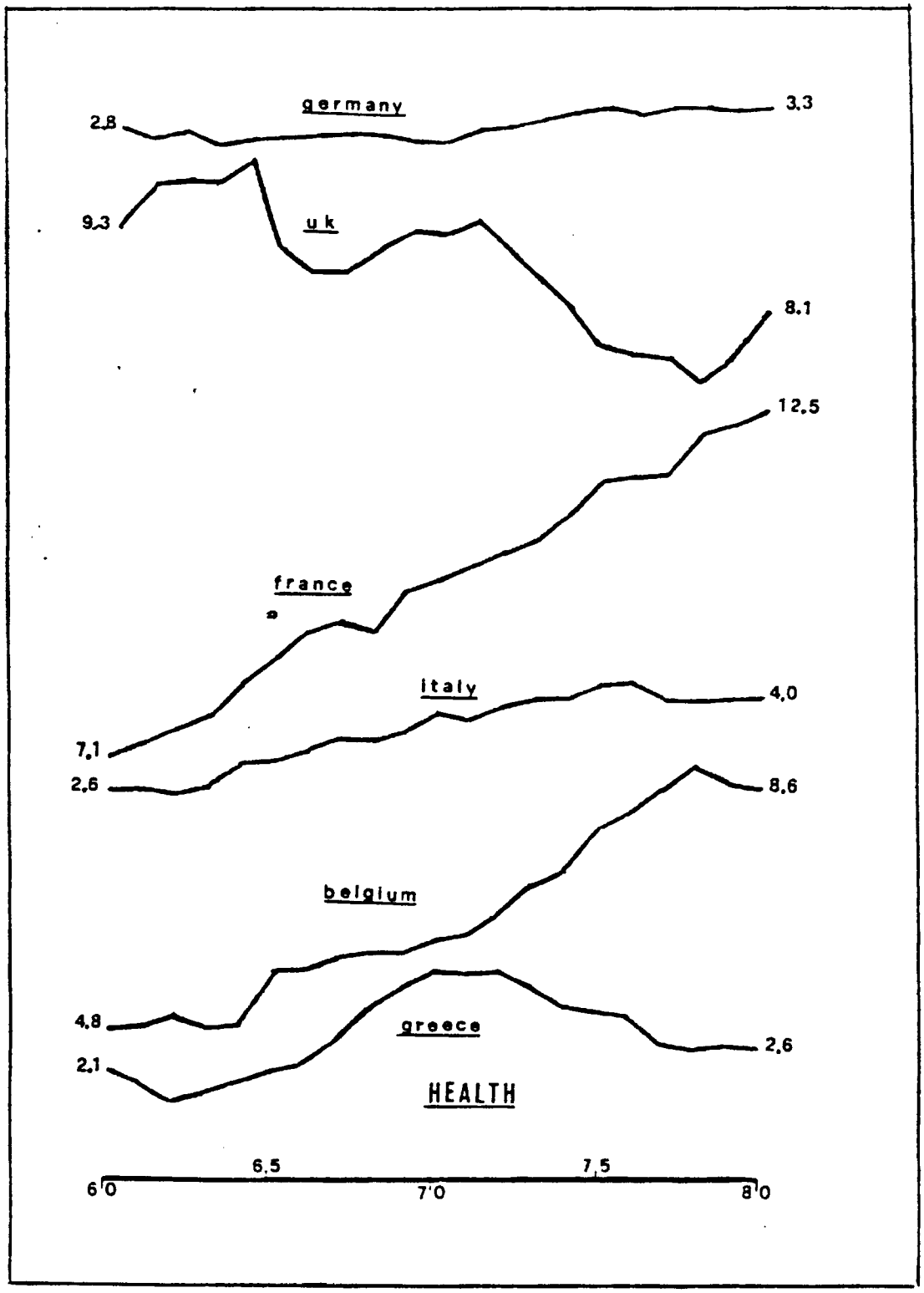


FIG.III.5:A comparison of the budget shares (at current prices) of the six European countries.

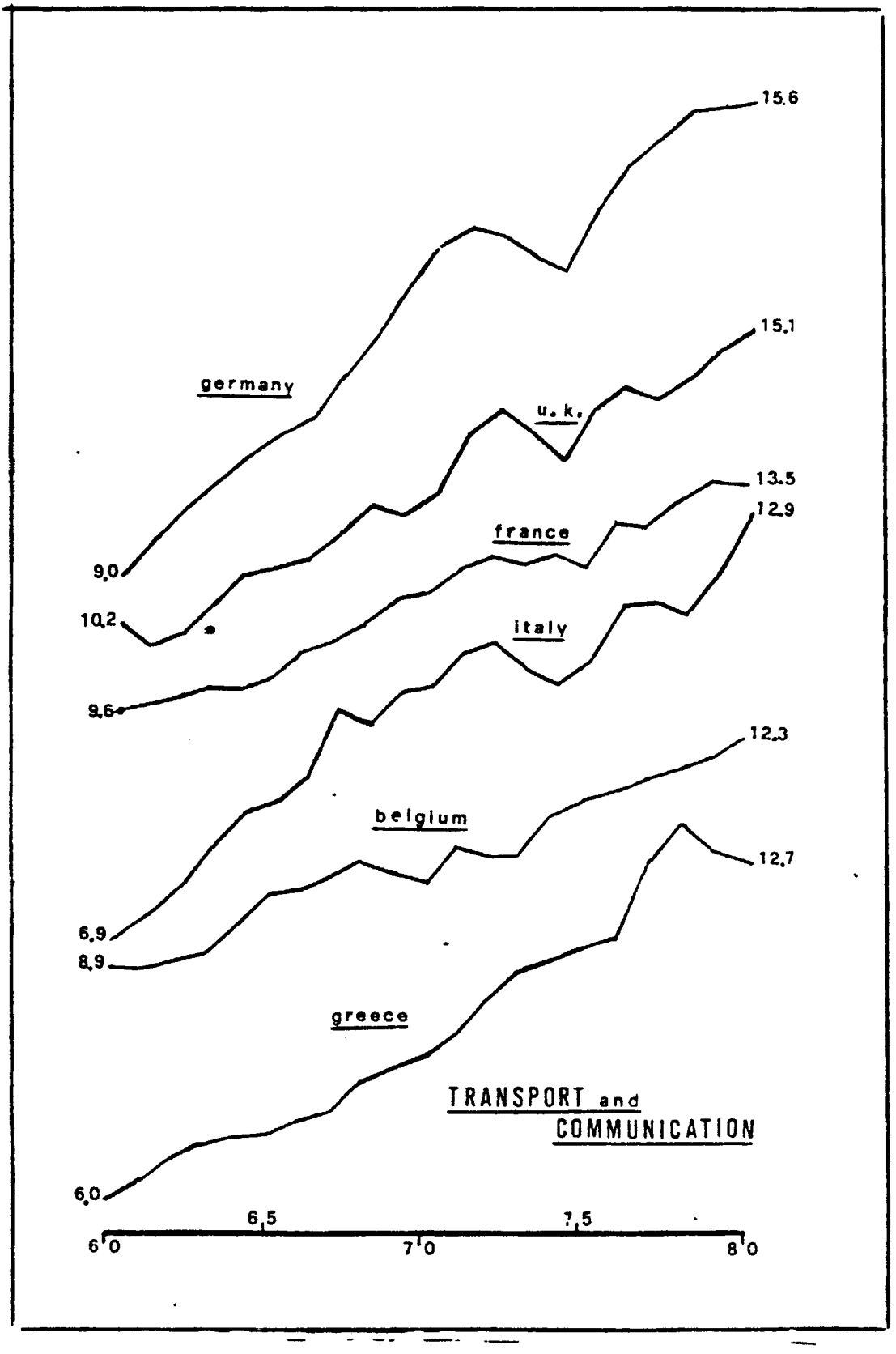


FIG.III.6.A comparison of the budget shares (at current prices) of the six European countries.

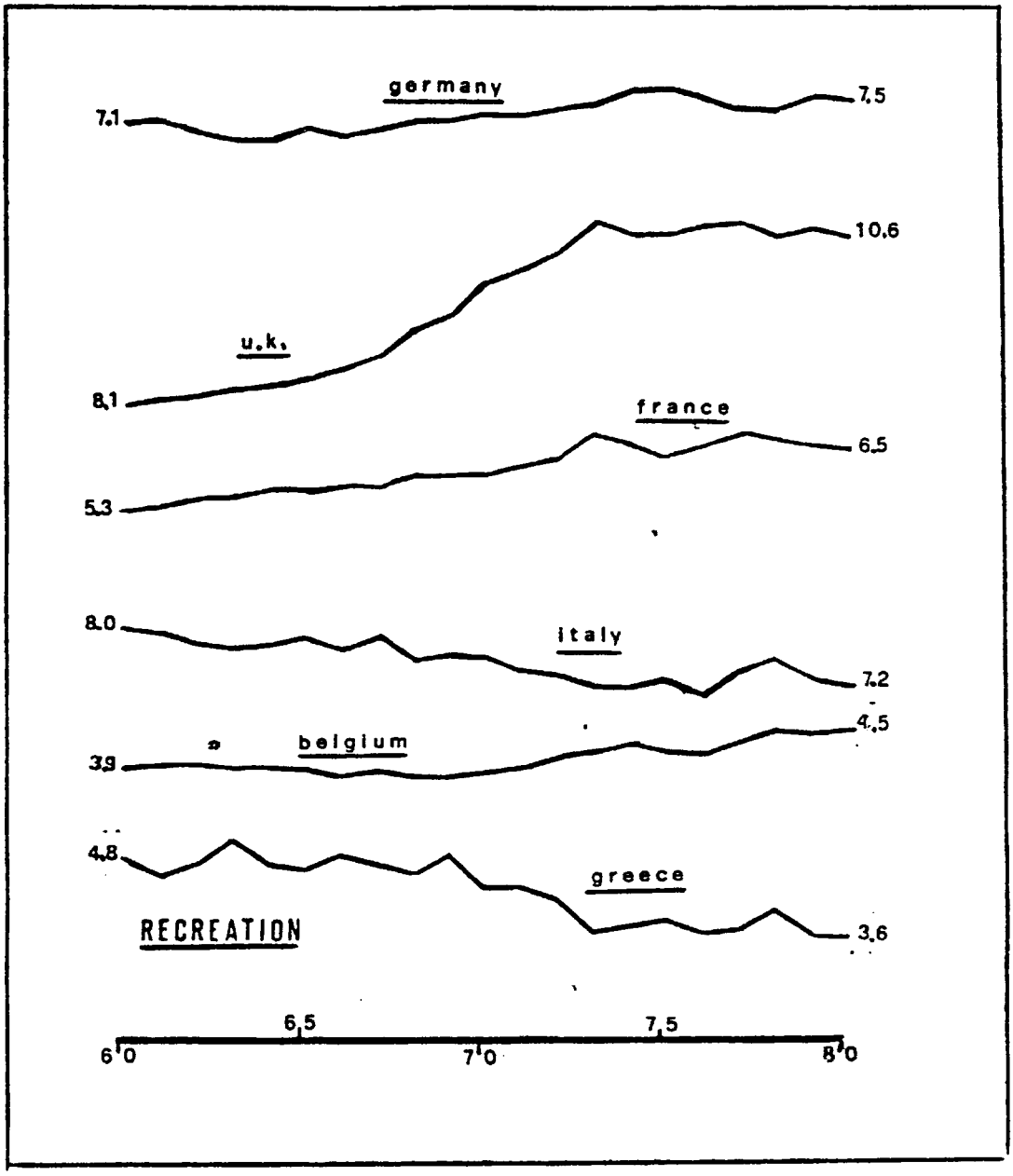


FIG.III.7:A comparison of the budget shares (at current prices) of the six European countries.

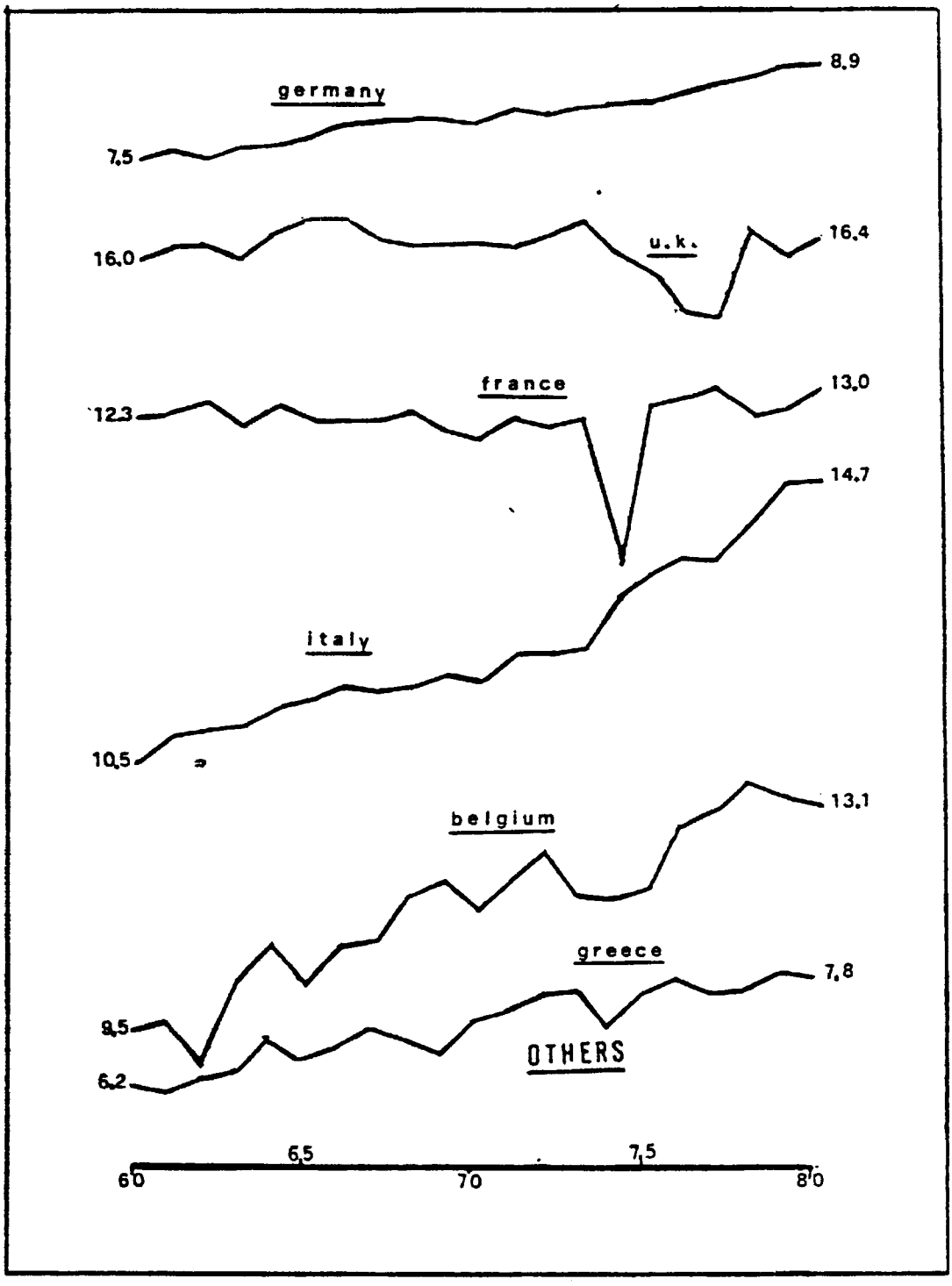


FIG.III8:A comparison of the budget shares (at current prices) of the six European countries.

3.7: Empirical results

The results obtained will be presented by grouping them according to country and model. First, the tables of the estimated parameters of the models with linear functions of time within the committed quantities are presented. This model has been chosen because as a nested model it contains in itself the traditional static ELES (when the coefficient of the time component are supposed to be zero). Then there are the tables of the compensated and non compensated elasticities to own prices for the years 1970 and 1980.

Secondly the estimated parameters of the habit formation model are summed up. Habits have been assumed to change following a two period moving average both at the first and the second stage. This permits us to preserve degrees of freedom for the estimation. On the other hand one must draw attention to the fact that two strong empirical restrictions are linked to this choice. (i) The coefficients of adaptation at the new level of consumption or working effort are the same for all the items. (ii) The choice of a two period moving average is only one among infinite adaptive mechanisms, so that different lag structures could better fit the data. The specifications which have been chosen however have the advantage of maintaining sufficiently clearly the functioning of the allocative models and the weight of habits while ensuring, at the same time, more flexibility.

Table III.1. GERMANY a) Parameters of the TELES estimated at the I-st stage (model with linear trends)

Items	Beta	Gamma1	Gamma2	D.W
Ist Group				
Food and beverages	0.398 (12.37)	15299 (1.91)	0.0006 (0.922)	1.48
Clothing	0.183 (4.453)	-28.55 (0.05)	16.50 (0.08)	1.58
Housing	0.373 (10.60)	0.008 (0.73)	-0.0004 (- .582)	1.74
Health	0.046 (3.513)	2122 (1.70)	---- **	1.27
IInd Group				
Furniture	0.239 (5.492)	3578.4 (0.731)	254.1 (0.716)	1.60
Transports	0.533 (10.216)	-17952 (-2.049)	573.0 (0.759)	1.90
Recreation	0.128 (5.136)	883.4 (0.336)	302.3 (1.485)	1.35
Others	0.099 (5.281)	-943.6 (-0.537)	433.6 (2.77)	1.86

b) Parameters of the TELES estimated at the I nd stage

I st group	0.242 (8.930)	-23.8 (-0.00)	569.3 (3.306)	1.95
II nd group	0.269 (7.303)	6.90 (3.099)	-0.635 (-3.136)	1.66
Labour supply	0.353 (5.431)	2691 * (10.38)	0.0001 (2.321)	1.935
Savings	0.136 (3.874)	------	------	2.41

* Maximum yearly working hours
** Parameter constrained to zero

Table III.2.GERMANY: Non compensated and compensated own price elasticities.

	Non compensated		Compensated	
ITEMS	1970	1980	1970	1980
Food, beverages	-0.65	-0.69	-0.49	-0.58
tobacco				
Clothing	-0.99	-0.96	-0.91	-0.89
Housing	-0.92	-0.91	-0.73	-0.79
Health	-0.63	-0.63	-0.62	-0.61
Furniture	-0.65	-0.69	-0.58	-0.59
Transport	-1.53	-1.20	-1.38	-1.05
Recreation	-0.60	-0.56	-0.56	-0.53
Others	-0.67	-0.51	-0.64	-0.49
Labour supply	-0.34	-0.31	0.033	0.034

Table III.3 : GERMANY a) Parameters of the TELES with proportional habit formation. (R. is the correlation coefficient between actual and fitted percentage growth rate).

Items	Beta	Gamma1	D.W.	R
Ist Group				
Food and beverages	0.497 (23.8)	0.384 (3.8)	1.93	0.83
Clothing	0.171 (11.9)	0.390 (3.6)	1.78	0.70
Housing	0.279 (10.3)	0.604 (4.9)	1.82	0.15
Health	0.054 (8.8)	0.516 (4.6)	2.01	0.30
IInd Group				
Furniture	0.223 (12.5)	0.003 (0.0)	1.25	0.82
Transport	0.429 (14.1)	0.235 (1.2)	1.10	0.97
Recreation	0.163 (12.9)	0.000 (0.0)	1.15	0.47
Others	0.185 (16.8)	0.047 (0.5)	1.45	0.83

b) Parameters of the TELES estimated at the IInd stage

Ist group	0.249 (5.7)	0.09 (0.18)	1.74	0.69
IInd group	0.390 (5.4)	0.00	1.90	0.46
Labour supply	0.209 (1.6)	1.207 (5.3)	2.00	0.76
Savings	0.151 (4.6)		2.43	0.54

FOOD, BEVERAGES AND TOBACCO

	EC11	ENC11
1962	-.557411	-.561391
1963	-.542326	-.656295
1964	-.539553	-.603073
1965	-.543405	-.607435
1966	-.537109	-.601079
1967	-.543406	-.607375
1968	-.541396	-.565355
1969	-.535770	-.559940
1970	-.537964	-.561834
1971	-.540438	-.604478
1972	-.530205	-.560255
1973	-.526255	-.550225
1974	-.532594	-.556654
1975	-.544334	-.569304
1976	-.541439	-.525457
1977	-.529770	-.557740
1978	-.536522	-.654493
1979	-.539382	-.553592
1980	-.530764	-.544774
	1	2

CLOTHING

	EC22	ENC22
1962	-.603424	-.544078
1963	-.591531	-.434194
1964	-.579806	-.442450
1965	-.510535	-.459199
1966	-.604154	-.446007
1967	-.593971	-.535525
1968	-.570534	-.539297
1969	-.609210	-.551863
1970	-.513434	-.556095
1971	-.504779	-.547431
1972	-.602795	-.545047
1973	-.576593	-.521246
1974	-.591077	-.623732
1975	-.606019	-.549673
1976	-.575705	-.438025
1977	-.590131	-.430795
1978	-.550928	-.529492
1979	-.574435	-.617096
1980	-.570109	-.520034
	1	2

HOUSING

	EC33	ENC33
1962	-.409471	-.479094
1963	-.412798	-.481891
1964	-.376203	-.445695
1965	-.373913	-.443405
1966	-.388939	-.458532
1967	-.405939	-.475431
1968	-.400565	-.470193
1969	-.337731	-.457294
1970	-.392055	-.451659
1971	-.390516	-.450133
1972	-.393534	-.463227
1973	-.377505	-.467095
1974	-.371417	-.471005
1975	-.403031	-.478624
1976	-.405587	-.470275
1977	-.371189	-.450792
1978	-.391019	-.450612
1979	-.375352	-.449544
1980	-.356971	-.439554
	1	2

HEALTH

	EC44	ENC44
1962	-.470523	-.511743
1963	-.440905	-.487085
1964	-.490305	-.511295
1965	-.510416	-.523036
1966	-.471513	-.494034
1967	-.495494	-.498914
1968	-.494974	-.497704
1969	-.492559	-.505509
1970	-.492797	-.506217
1971	-.519134	-.532354
1972	-.510496	-.531715
1973	-.525424	-.539544
1974	-.526140	-.539560
1975	-.515710	-.529930
1976	-.472934	-.505154
1977	-.502704	-.516194
1978	-.500511	-.521732
1979	-.472942	-.505062
1980	-.470753	-.503273
	1	2

FURNITURE

	EC55	ENC55
1962	-.939677	-.995763
1963	-.939597	-.995587
1964	-.939778	-.995655
1965	-.939947	-.996930
1966	-.939748	-.995835
1967	-.939711	-.995501
1968	-.939727	-.995617
1969	-.939970	-.996950
1970	-.939891	-.996991
1971	-.939936	-.996905
1972	-.939397	-.996987
1973	-.939750	-.996843
1974	-.939639	-.996773
1975	-.939541	-.996731
1976	-.939675	-.995755
1977	-.939740	-.996033
1978	-.939535	-.995725
1979	-.939615	-.996705
1980	-.909639	-.996127
	1	2

TRANSPORT & COMMUNICATION

	EC66	ENC66
1962	-.990798	-1.16364
1963	-1.00557	-1.17311
1964	-1.00527	-1.17281
1965	-.997572	-1.15511
1966	-1.00923	-1.17577
1967	-1.02232	-1.19936
1968	-1.00878	-1.17632
1969	-.992529	-1.16307
1970	-.995263	-1.15280
1971	-1.00916	-1.17070
1972	-1.02723	-1.19777
1973	-1.02043	-1.17597
1974	-1.03542	-1.20295
1975	-1.00376	-1.17130
1976	-.997383	-1.15492
1977	-1.00547	-1.17301
1978	-1.01159	-1.17913
1979	-1.02109	-1.19862
1980	-1.03692	-1.20446
	1	2

	RECREATION		OTHERS		WORKING HOURS	
	EC77	ENC77	EC83	ENC83	EC99	ENC99
1962	-.938574	-1.00223	-.958735	-1.04113	.130548	-.262158E-01
1963	-.938559	-1.00222	-.959312	-1.04155	.179614	-.351495E-01
1964	-.938465	-1.00214	-.959230	-1.04148	.184741	-.345229E-01
1965	-.938407	-1.00205	-.958374	-1.04052	.151761	-.475025E-01
1966	-.938469	-1.00213	-.958975	-1.04112	.167793	-.409711E-01
1967	-.938445	-1.00210	-.958368	-1.04062	.207749	-.101542E-02
1968	-.938444	-1.00210	-.959198	-1.04145	.151178	-.475655E-01
1969	-.938412	-1.00207	-.958925	-1.04107	.136146	-.726193E-01
1970	-.938414	-1.00207	-.966479	-1.04073	.155734	-.529797E-01
1971	-.938439	-1.00210	-.969003	-1.04175	.152234	-.364705E-01
1972	-.938411	-1.00207	-.959383	-1.04164	.140150	-.285837E-01
1973	-.938437	-1.00209	-.970335	-1.04308	.165529	-.431348E-01
1974	-.938458	-1.00212	-.970799	-1.04335	.193701	-.349677E-01
1975	-.938445	-1.00210	-.969375	-1.04172	.210544	.167983E-02
1976	-.938475	-1.00213	-.958463	-1.04371	.153741	-.500235E-01
1977	-.938479	-1.00214	-.958229	-1.04048	.146177	-.625573E-01
1978	-.938465	-1.00214	-.960724	-1.04117	.153764	-.454303E-01
1979	-.938491	-1.00215	-.959544	-1.04189	.151733	-.476012E-01
1980	-.938592	-1.00225	-.959975	-1.04272	.152265	-.405391E-01
	1	2	1	2	1	2

Table III.4: GERMANY - Estimated short-run own price elasticities for single items of consumption and labour supply.

GERMANY.

TELES with linear trends for committed quantities

At the first stage the model of the first group has been estimated with the dynamic component of Health expenditure constrained to zero. This permits us to respect the condition of committed quantities lower than effective consumption over the entire sample for all the single items. The estimation of the system relative to the second group does not present specific problems. The budget constraint is respected over the whole sample for all its items. Transport in particular shows a strong decreasing trend which determines this item's high elasticity to its own price.

At the second stage the budget constraint is respected over the entire sample. The maximum working hours are noticeably higher than the effective working hours. Consequently, labour supply presents a high non-compensated negative elasticity with respect to wages. Thus, among the European countries, Germany has the most sloped backward bending curve.

TELES with proportional habit formation for committed quantities

The German data has fitted very well into this kind of model. At the first stage the first group reveals that the representative German worker-consumer is strongly influenced by past consumption in particular for the items: Housing and Health. This seems quite reasonable because this kind of consumption satisfies basic needs that are only partly influenced by changes in relative prices. The second group is characterised by the absence of relevant habit effects for three items and shows a very low coefficient of "memory" for the consumption of Transport & communication

At the second stage there are no appreciable effects of habits for the two kinds of group consumption.

The non compensated elasticity of labour supply is always negative, but its values are appreciably lower than those estimated by means of other static or dynamic models.

Table III.5 : U K a) Parameters of the TELES estimated at the I -st stage
(model with linear trends)

Items	Beta	Gamma1	Gamma2	D.W
I- Group				
Foods and beverages	0.353 (11.14)	2465 (4.924)	-0.0003 (-2.179)	2.04
Clothing	0.088 (2.946)	1456 (3.311)	-0.286 (-0.01)	1.59
Housing	0.544 (17.84)	0.0046 (1.401)	-0.0005 (-3.03)	2.39
Health	0.015 (3.210)	60.88 (1.381)	---- **	1.33
II -nd Group				
Furniture	0.206 (12.61)	-773.7 (-1.278)	72.02 (1.843)	1.83
Transport	0.392 (9.490)	-1357 (-1.161)	154.9 (2.05)	1.228
Recreation	0.129 (6.268)	-227.5 (-0.467)	100.7 (3.516)	0.89
Others	0.273 (7.394)	-2664 (-1.996)	229.4 (-1.996)	1.84

b) Parameters of the TELES estimated at the II nd stage

I st group	0.222 (11.86)	2.913 (24.6)	---- **	1.55
II nd group	0.341 (16.74)	-0.411 (-0.35)	0.0004 (0.08)	1.37
Labour supply	0.123 (3.384)	2.175 * (33.12)	----	1.82
Savings	0.314 (14.32)	----	----	1.57

* Maximum yearly working hours
** Parameter constrained to zero

Table III.6. UNITED KINGDOM: Non compensated and compensated own price elasticities.

	Non compensated		Compensated	
ITEMS	1970	1980	1970	1980
Food, beverages tobacco	-0.55	-0.64	-0.47	-0.44
Clothing	-0.22	-0.41	-0.20	-0.37
Housing	-0.79	-1.00	-0.67	-0.54
Health	-0.69	-0.72	-0.69	-0.70
Furniture	-0.99	-0.67	-0.92	-0.61
Transport	-1.90	-0.56	-0.77	-0.43
Recreation	-0.61	-0.39	-0.57	-0.35
Others	-1.04	-0.54	-0.94	-0.45
Labour supply	-0.035	-0.076	0.093	0.052

Table III.7 : UNITED KINGDOM a) Parameters of the TELES with proportional habit formation. (R. is the correlation coefficient between actual and fitted percentage growth rate).

Items	Beta	Gamma1	D.W.	R
Ist Group				
Food and beverages	0.422 (9.2)	0.650 (7.2)	2.33	0.70
Clothing	0.188 (5.4)	0.662 (7.3)	1.99	0.40
Housing	0.364 (8.9)	0.759 (8.9)	2.25	0.71
Health	0.0268 (3.3)	0.249 (1.5)	1.48	0.56
IInd Group				
Furniture	0.162 (12.3)	-0.02 (-0.16)	1.60	0.94
Transport	0.407 (13.5)	-0.09 (-0.4)	1.20	0.91
Recreation	0.133 (8.12)	0.364 (2.97)	1.30	0.84
Others	0.298 (9.5)	0.119 (0.7)	2.06	0.69

b) Parameters of the TELES estimated at the IInd stage

Ist group	0.213 (12.9)	-0.02 (-0.8)	1.74	0.73
IInd group	0.615 (30.5)	0.0. (0.4)	1.73	0.95
Labour supply	0.003 (0.29)	1.001 (16.9)	2.14	0.99
Savings	0.168 (5.7)		1.74	0.67

FOOD, BEVERAGES AND TOBACCO

	EC11	ENC11
1962	-.325752	-.415511
1963	-.331914	-.421573
1964	-.326214	-.415975
1965	-.311071	-.409610
1966	-.325538	-.415397
1967	-.339749	-.429708
1968	-.337731	-.425773
1969	-.325838	-.415577
1970	-.330832	-.420571
1971	-.335405	-.425164
1972	-.331514	-.421273
1973	-.317797	-.427586
1974	-.325934	-.415573
1975	-.309561	-.399320
1976	-.316357	-.405675
1977	-.307760	-.397559
1978	-.330275	-.425134
1979	-.343150	-.437659
1980	-.320727	-.419496
	1	2

CLOTHING

	EC22	ENC22
1962	-.322633	-.362368
1963	-.347342	-.387477
1964	-.354915	-.394649
1965	-.351352	-.391297
1966	-.330475	-.379429
1967	-.342701	-.382635
1968	-.371100	-.411034
1969	-.353127	-.393351
1970	-.350135	-.400070
1971	-.350536	-.400570
1972	-.364625	-.404550
1973	-.356941	-.396076
1974	-.323694	-.361229
1975	-.370710	-.362644
1976	-.321448	-.361392
1977	-.323150	-.353084
1978	-.376443	-.416577
1979	-.398319	-.429253
1980	-.361470	-.401474
	1	2

HOUSING

	EC33	ENC33
1962	-.257493	-.344097
1963	-.267947	-.345341
1964	-.279090	-.306494
1965	-.237268	-.314062
1966	-.245962	-.327455
1967	-.250462	-.337055
1968	-.273523	-.350917
1969	-.257467	-.334591
1970	-.240404	-.323798
1971	-.255306	-.333200
1972	-.254010	-.331474
1973	-.242972	-.327366
1974	-.275230	-.307025
1975	-.219519	-.296912
1976	-.215043	-.292437
1977	-.230771	-.307455
1978	-.245707	-.321095
1979	-.259437	-.336631
1980	-.231401	-.309795
	1	2

HEALTH

	EC44	ENC44
1962	-.760257	-.705972
1963	-.790527	-.792532
1964	-.770492	-.702177
1965	-.727530	-.733295
1966	-.731232	-.734973
1967	-.754704	-.760410
1968	-.757429	-.773173
1969	-.749459	-.775144
1970	-.750947	-.762586
1971	-.750640	-.766345
1972	-.750950	-.705556
1973	-.730333	-.754039
1974	-.737530	-.747275
1975	-.700751	-.712465
1976	-.724792	-.732497
1977	-.737703	-.743479
1978	-.749403	-.755165
1979	-.769325	-.775331
1980	-.755985	-.774601
	1	2

FURNITURE

	EC55	ENC55
1962	-.921952	-1.02174
1963	-.921440	-1.02123
1964	-.921052	-1.02054
1965	-.921479	-1.02177
1966	-.921715	-1.02170
1967	-.921101	-1.02089
1968	-.920409	-1.02025
1969	-.921771	-1.02175
1970	-.921920	-1.02171
1971	-.920533	-1.02032
1972	-.916735	-1.01872
1973	-.919758	-1.01954
1974	-.922342	-1.02213
1975	-.923010	-1.02280
1976	-.921906	-1.02149
1977	-.922540	-1.02243
1978	-.920501	-1.02045
1979	-.919916	-1.01963
1980	-.921233	-1.02102
	1	2

TRANSPORT & COMMUNICATION

	EC66	ENC66
1962	-.816799	-1.06720
1963	-.810468	-1.06089
1964	-.810570	-1.06107
1965	-.815657	-1.06005
1966	-.810849	-1.05775
1967	-.813874	-1.05427
1968	-.815536	-1.06404
1969	-.818070	-1.06047
1970	-.815392	-1.05579
1971	-.810303	-1.06070
1972	-.809568	-1.05997
1973	-.810579	-1.06593
1974	-.825730	-1.07513
1975	-.823529	-1.07493
1976	-.819395	-1.05979
1977	-.820991	-1.07139
1978	-.816199	-1.06060
1979	-.815310	-1.06571
1980	-.819967	-1.05947
	1	2

	RECREATION		OTHERS		WORKING HOURS	
	EC77	ENC77	EC86	ENC85	EC99	ENC99
1962	-.590615	-.570303	-.720925	-.904334	.132179E-01	.795376E-02
1963	-.605135	-.587093	-.722764	-.906173	.224406E-01	.191554E-01
1964	-.599779	-.581672	-.724375	-.907784	.111771E-01	.792287E-02
1965	-.596757	-.578563	-.720944	-.904253	.667764E-02	.342346E-02
1966	-.594715	-.576638	-.719969	-.903378	.326992E-02	.147432E-04
1967	-.606724	-.590615	-.720911	-.904221	-.577531E-02	-.909379E-02
1968	-.612558	-.694461	-.721066	-.904475	.446900E-02	.119082E-02
1969	-.599653	-.681346	-.719718	-.903127	.559056E-02	.343558E-02
1970	-.605025	-.565913	-.723459	-.906859	.213510E-02	-.111993E-02
1971	-.611431	-.593294	-.726269	-.909673	.797606E-02	.452243E-02
1972	-.619954	-.701745	-.726535	-.911945	.137235E-01	.104743E-01
1973	-.620031	-.701924	-.727957	-.911365	.102792E-01	.704572E-02
1974	-.599313	-.560335	-.720118	-.903527	.127349E-01	.747975E-02
1975	-.579023	-.560915	-.715322	-.893431	.126177E-01	.756356E-02
1976	-.583310	-.565203	-.710561	-.893971	.931036E-02	.605619E-02
1977	-.588202	-.570095	-.714265	-.897674	.105505E-01	.731238E-02
1978	-.598724	-.580615	-.725014	-.908423	.450459E-02	.133072E-02
1979	-.602613	-.584505	-.729272	-.912582	-.133075E-02	-.464493E-02
1980	-.592745	-.574637	-.723944	-.907254	.219211E-02	-.105295E-02
	1	2	1	2	1	2

Table III.8 UNITED KINGDOM- Estimated short-run own price elasticities for single items of consumption and labour supply.

UNITED KINGDOM.

TELES with linear trends for committed quantities

The case of the United Kingdom shows many similarities with that of Germany. Also in this case the violation of the condition on the committed quantities at the first stage has been solved by constraining the committed quantity of Health expenditure to constancy. It is difficult to hypothesize on the habit formation of this kind of consumption. We recall that Health expenditure in the U.K. is very low and that State intervention strongly influences consumer preferences. The parameters of each item of the second group conform over the whole period. However autocorrelation exists for **Transport** and **Recreation** which the first order differences have not eliminated.

At the second stage the model does not perform so well. The committed quantity of the first group turns out to be greater than effective supernumerary consumption for the first four observations. Also the maximum working hours are less than the effective working hours for the first four observations. Labour supply elasticities are therefore rather low.

As regards the second group the strong positive trends of the committed quantities of the single items decrease the supernumerary consumption which must be allocated at the second stage. Therefore even though the common committed quantity of group II is zero in 1980, the elasticities of these goods and services turn out to be lower than those of the first group in contrast to what was expected.

TELES with proportional habits formation for committed quantities

The dynamic model with habit effects describe a type of consumer behaviour which is coherent with the basic hypothesis of this expenditure system. Consumption is divided into two group with low and high elasticities to own price. Thus **Furniture**, **Transport** and **Other Goods** do not depend upon past consumption. The share of supernumerary consumption which has to be allocated at the second stage on the basis of the relative price is higher than those of the items of the first group. The elasticities turn out to have the values expected of them.

The United Kingdom, on the other hand, has a labour supply function which is determined practically by habits alone. This leads to a non-compensated elasticity which is close to zero. Yet this fact should not be over-emphasized. In fact it probably depends on the particular criterion of registering worked hours, which in the U.K. correspond to hours paid for.

Table III.9: FRANCE. a) Parameters of the TELES estimated at the I st stage (model with linear trends)

Items	Beta	Gamma1	Gamma2	D.W
I Group				
Food and beverages	0.217 (5.26)	28.564 (4.68)	0.003 (1.45)	.77
Clothing	0.271 (4.96)	5.887 (0.90)	-1,508 (-2.65)	1.16
Housing	0.296 (6.82)	0.302 (0.84)	0.000 (0.000)	1.72
Health	0.216 2.229	-8,522 -0.77	368 0.35	1.97
II nd Group				
Furniture	0.306 6.589	6,388 1.06	——— **	0.93
Transport	0.415 6.41	-20,539 -1.70	1,026 1.70	1.61
Recreation	0.135 7.06	1,108 0.35	406 3.04	1.97
Others	0.144 4.50	36,550 16.14	——— **	1.43

b) Parameters of the TELES estimated at the II nd stage

I st group	0.102 3.136	17,376 4.67	1,149 7.772	2.31
II nd group	0.392 9.48	2.81 1.96	-0.233 -1.67	2.37
Labour supply	0.269 4.54	2,769 * 12.73	-0.012 -1.00	2.50
Saving	0.237 5.75	———	———	2.21

* Maximum yearly working hours
** Parameter constrained to zero

Table.10.FRANCE : Non compensated and compensated own price elasticities.

	Non compensated		Compensated	
ITEMS	1970	1980	1970	1980
Food, beverages tobacco	-0.42	-0.43	-0.34	-0.35
Clothing	-0.31	-0.34	-0.27	-0.30
Housing	-0.81	-0.81	-0.78	-0.76
Health	-0.91	-0.90	-0.89	-0.86
Furniture	-0.41	-0.39	-0.17	-0.15
Transport	-0.90	-0.92	-0.87	-0.89
Recreation	-0.71	-0.73	-0.67	-0.69
Others	-0.65	-0.71	-0.55	-0.61
Labour supply	-0.181	-0.182	0.161	0.162

Table III.11 : FRANCE a) Parameters of the Dynamic TELES (proportional habit formation). (R. is the correlation coefficient between actual and fitted percentage growth rate).

Items	Beta	Gamma1	D.W.	R
Ist Group				
Food and beverages	0.442 (22.7)	0.448 (4.9)	1.84	0.67
Clothing	0.146 (13.8)	0.452 (4.7)	2.25	0.60
Housing	0.250 (13.1)	0.705 (7.3)	2.42	0.10
Health	0.162 (10.8)	0.777 (8.6)	2.45	0.10
IInd Group				
Furniture	0.244 (10.5)	0.691 (7.3)	2.46	0.54
Transport	0.296 (11.4)	0.874 (10.0)	2.15	0.67
Recreation	0.129 (11.6)	0.699 (8.7)	1.60	0.25
Others	0.330 (15.6)	0.757 (9.2)	2.98	0.50

b) Parameters of the TELES estimated at the IInd stage

Ist group	0.412 (12.0)	-0.003 (-0.04)	2.14	0.66
IInd group	0.193 (4.7)	0.00 (0.00)	2.36	0.30
Labour supply	0.084 (2.4)	1.071 (24.8)	2.25	0.97
Savings	0.310 (6.8)	———	2.52	0.74

FOOD, BEVERAGES AND TOBACCO

	EC11	ENC11
1963	.	.
1964	-.454044	-.646227
1965	-.456341	-.649024
1966	-.460733	-.649915
1967	-.463430	-.649613
1968	-.463572	-.649755
1969	-.464431	-.646396
1970	-.467635	-.639818
1971	-.468551	-.640336
1972	-.468282	-.643445
1973	-.468477	-.640660
1974	-.467164	-.639367
1975	-.469170	-.641352
1976	-.467239	-.639421
1977	-.468820	-.638403
1978	-.469707	-.638698
1979	-.467901	-.639983
1980	-.468639	-.640822
	1	2

CLOTHING

	EC22	ENC22
1963	.	.
1964	-.343232	-.603566
1965	-.334950	-.583214
1966	-.328999	-.589264
1967	-.330309	-.586674
1968	-.332978	-.593262
1969	-.340232	-.606565
1970	-.331530	-.591994
1971	-.340921	-.601185
1972	-.345785	-.605651
1973	-.322998	-.583362
1974	-.314141	-.577575
1975	-.319375	-.577443
1976	-.318180	-.579544
1977	-.316056	-.572433
1978	-.317626	-.577991
1979	-.313137	-.577501
1980	-.321975	-.583239
	1	2

HOUSING

	EC33	ENC33
1963	.	.
1964	-.337507	-.410571
1965	-.312398	-.415643
1966	-.309929	-.412673
1967	-.325309	-.428354
1968	-.325618	-.429562
1969	-.316096	-.421143
1970	-.322545	-.425289
1971	-.314934	-.417979
1972	-.309919	-.412954
1973	-.316575	-.419523
1974	-.300518	-.403662
1975	-.294625	-.397069
1976	-.305570	-.408515
1977	-.302057	-.405104
1978	-.304434	-.407879
1979	-.301109	-.404152
1980	-.317769	-.421332
	1	2

HEALTH

	EC44	ENC44
1963	.	.
1964	-.296583	-.367165
1965	-.297419	-.366035
1966	-.292734	-.359343
1967	-.282929	-.349415
1968	-.267760	-.334365
1969	-.267119	-.333725
1970	-.279909	-.346496
1971	-.295195	-.361791
1972	-.296593	-.363179
1973	-.286335	-.352922
1974	-.276715	-.343301
1975	-.281720	-.348305
1976	-.271259	-.337845
1977	-.269269	-.335855
1978	-.273367	-.339914
1979	-.276758	-.343354
1980	-.296263	-.364849
	1	2

FURNITURE

	EC55	ENC55
1963	.	.
1964	-.350173	-.397448
1965	-.332179	-.369453
1966	-.322445	-.359721
1967	-.328736	-.366051
1968	-.338073	-.375388
1969	-.343434	-.380749
1970	-.331047	-.368372
1971	-.341504	-.378779
1972	-.356173	-.393448
1973	-.350432	-.387707
1974	-.340501	-.377775
1975	-.336997	-.374272
1976	-.332471	-.369746
1977	-.327469	-.364744
1978	-.328476	-.365751
1979	-.330140	-.367415
1980	-.331937	-.369352
	1	2

TRANSPORT & COMMUNICATION

	EC66	ENC66
1963	.	.
1964	-.202909	-.260155
1965	-.198184	-.255534
1966	-.209436	-.266786
1967	-.196503	-.252853
1968	-.173383	-.231733
1969	-.175757	-.234107
1970	-.190576	-.248926
1971	-.198327	-.256677
1972	-.214203	-.272553
1973	-.220532	-.278882
1974	-.191449	-.249799
1975	-.227430	-.285780
1976	-.234965	-.293315
1977	-.215035	-.273385
1978	-.189555	-.247905
1979	-.191739	-.250089
1980	-.192760	-.251113
	1	2

	RECREATION		OTHERS		WORKING HOURS	
	EC77	ENC77	EC88	ENC88	EC99	ENC99
1963					.513814E-01	-.227445E-01
1964	-.359946	-.384940	-.255230	-.329361	.698145E-01	-.153113E-01
1965	-.340255	-.371276	-.253068	-.317213	.785351E-01	-.559067E-02
1966	-.340745	-.371733	-.265737	-.329869	.545517E-01	-.195741E-01
1967	-.342316	-.367313	-.250388	-.324519	.731973E-01	-.109395E-01
1968	-.331464	-.356457	-.260931	-.325062	.732044E-01	-.109214E-01
1969	-.338153	-.363147	-.247536	-.311728	.545398E-01	-.159863E-01
1970	-.337850	-.362843	-.229305	-.293437	.776735E-01	-.645534E-02
1971	-.351645	-.376639	-.282157	-.346296	.738544E-01	-.527143E-02
1972	-.358952	-.363846	-.297819	-.351950	.801231E-01	-.400562E-02
1973	-.356074	-.381063	-.279778	-.343210	.802526E-01	-.367314E-02
1974	-.359900	-.384794	-.260947	-.324978	.852119E-01	.708607E-02
1975	-.340459	-.365451	-.257727	-.331858	.132153	.179759E-01
1976	-.348599	-.373591	-.283424	-.347555	.521363E-01	-.198945E-02
1977	-.354556	-.379553	-.271748	-.335919	.739393E-01	-.101645E-01
1978	-.351659	-.376653	-.239591	-.303822	.763931E-01	-.773249E-02
1979	-.335937	-.360931	-.246539	-.312663	.740409E-01	-.100673E-01
1980	-.288469	-.313463	-.238552	-.302693	.680269E-01	-.160999E-01
	1	2	1	2	1	2

Table III.12: FRANCE - Estimated short-run own price elasticities for single items of consumption and labour supply.

FRANCE.

TELES with linear trends for committed quantities

At the first stage the model reveals some problems for the estimation of the items in the second group. As a matter of fact the item **Other goods** violates the condition of the committed quantities over the first 11 observations even when its dynamic component is constrained to zero.

At the second stage the model behaves as expected, but the maximum working hours turn out to be very high so that labour supply elasticities are rather high too.

The committed quantity common to the second group shows a tendency to assume negative values at the end of the period. This can be interpreted as a tendency toward a relationship of complementarity with other goods.

TELES with proportional habit formation for committed quantities

The model applied to French data contradicts the basic idea of the existence of two groups with different coefficients of adaptation to past consumption. As a matter of fact the items of the second group show very high committed quantities. In particular **Transport**, **Furniture** and **Other goods** are highly dependent on past experiences. Their elasticities are abnormally low.

The labour supply curve for this country is also backward bending, even though this second dynamic specification considerably reduces its elasticity with respect to the hypothesis of linear trends in committed quantities.

Table III.13: ITALY a) Parameters of the TELES estimated at the I -st stage
(model with linear trends)

Items	Beta	Gamma1	Gamma2	D.W
I Group				
Food ,beverages	0.468 (9.99)	361.5 (3.08)	0.00 (0.00)	1.524
Clothing	0.199 (5.47)	143.2 (2.253)	-4.31 (-1.111)	1.774
Housing	0.291 (9.56)	0.02 (0.95)	0.0002 (-1.64)	2.26
Health	0.042 (2.40)	18.96 (0.69)	2.54 (1.43)	1.09
II -nd Group				
Furniture	0.256 (6.45)	141.6 (3.91)	1.31 (0.52)	1.57
Transport	0.476 (9.40)	214.9 (6.46)	1.22 (0.234)	1.86
Recreation	0.062 (2.09)	58.33 (1.882)	6.112 (4.30)	1.69
Others	0.205 (7.78)	157.9 (9.31)	6.76 (3.44)	1.66

b) Parameters of the TELES estimated at the II nd stage

I -st group	0.533 (6.18)	3.736 (2.87)	-39.1 (-0.6)	1.70
II -nd group	0.300 (5.602)	0.5 (2.83)	-0.05 (-3.38)	2.40
Labour supply	0.119 (1.47)	1978 * (20.29)	0.00 (2.19)	1.69
Savings	0.047 (5.14)	———	———	1.75

* Maximum yearly working hours
** Parameter contrained to zero

Table III.14: ITALY: Non compensated and compensated own price elasticities.

	Non compensated		Compensated	
ITEMS	1970	1980	1970	1980
Food, beverages tobacco	-0.31	-0.59	-0.25	-0.33
Clothing	-0.31	-0.74	-0.34	-0.63
Housing	-0.61	-0.89	-0.67	-0.74
Health	-0.36	-0.47	-0.36	-0.45
Furniture	-0.04	-0.16	+0.02	-0.15
Transport	-0.05	-0.31	-0.01	-0.22
Recreation	-0.20	-0.21	-0.19	-0.18
Others	-0.09	-0.11	-0.25	-0.07
Labour supply	n.a	-0.061	n.a	0.054

Table III.15 : ITALY a) Parameters of the TELES with proportional habit formation. (R. is the correlation coefficient between actual and fitted percentage growth rate).

Items	Beta	Gamma1	D.W	R
Ist Group				
Foods and beverages	0.580 (43.9)	0.712 (9.1)	1.51	0.84
Clothing	0.174 (12.1)	0.853 (8.8)	1.62	0.72
Housing	0.198 (20.8)	0.819 (11.3)	2.23	0.77
Health	0.047 (8.0)	0.873 (12.1)	2.00	0.45
IInd Group				
Furniture	0.197 (8.99)	1.013 (10.6)	1.93	0.72
Transport	0.240 (7.2)	1.00 (11.3)	1.89	0.74
Recreation	0.229 (9.7)	0.922 (10.6)	1.82	0.42
Others	0.332 (14.2)	1.06 (18.9)	1.62	0.80
b) Parameters of the TELES estimated at the IInd stage				
Ist group	0.322 (9.9)	-0.06 (-0.68)	1.75	0.87
IInd group	0.104 (3.0)	0.0 (0.0)	1.80	0.76
Labour supply	0.107 (1.6)	1.04 (28.3)	2.60	0.98
Savings	0.467 (9.84)	———	2.60	0.88

FOOD, BEVERAGES AND TOBACCO

	EC11	ENC11
1962	-.280877	-.467442
1963	-.291173	-.477738
1964	-.260596	-.453151
1965	-.276309	-.462865
1966	-.293525	-.480090
1967	-.271586	-.464151
1968	-.269756	-.456321
1969	-.272195	-.458760
1970	-.277307	-.463872
1971	-.259909	-.446474
1972	-.251734	-.438259
1973	-.251979	-.448545
1974	-.255355	-.441921
1975	-.230231	-.416795
1976	-.237385	-.423953
1977	-.240433	-.426998
1978	-.243385	-.431950
1979	-.252555	-.439120
1980	-.251330	-.437895
	1	2

CLOTHING

	EC22	ENC22
1962	-.229400	-.285515
1963	-.256514	-.312629
1964	-.199145	-.245260
1965	-.156475	-.212593
1966	-.210539	-.265563
1967	-.222124	-.279239
1968	-.202739	-.253854
1969	-.189179	-.245294
1970	-.223060	-.279175
1971	-.194011	-.240126
1972	-.192095	-.248211
1973	-.193781	-.249496
1974	-.157251	-.213365
1975	-.755026E-01	-.131619
1976	-.124763	-.180809
1977	-.155185	-.221300
1978	-.152415	-.208530
1979	-.191373	-.247488
1980	-.210318	-.274933
	1	2

HOUSING

	EC33	ENC33
1962	-.226443	-.290133
1963	-.240598	-.304287
1964	-.232502	-.296191
1965	-.225349	-.289038
1966	-.238612	-.302302
1967	-.213373	-.277062
1968	-.207752	-.271441
1969	-.211618	-.275308
1970	-.214276	-.277965
1971	-.213050	-.276740
1972	-.211720	-.275410
1973	-.211169	-.274857
1974	-.192165	-.255674
1975	-.178325	-.242014
1976	-.187937	-.251627
1977	-.171890	-.255580
1978	-.200615	-.264306
1979	-.191107	-.254795
1980	-.189115	-.252805
	1	2

HEALTH

	EC44	ENC44
1962	-.199863	-.219157
1963	-.222751	-.238045
1964	-.228721	-.244215
1965	-.254337	-.269631
1966	-.256901	-.282195
1967	-.225927	-.241221
1968	-.204618	-.219912
1969	-.221159	-.236453
1970	-.251425	-.256719
1971	-.183830	-.199124
1972	-.224722	-.240215
1973	-.275317	-.290612
1974	-.246784	-.262079
1975	-.198931	-.214225
1976	-.200397	-.215691
1977	-.169454	-.164748
1978	-.150034	-.165293
1979	-.190774	-.196263
1980	-.157035	-.182379
	1	2

FURNITURE

	EC55	ENC55
1962	-.141462	-.161990
1963	-.180739	-.207256
1964	-.316416E-01	-.102360
1965	-.953819E-02	-.301563E-01
1966	-.476591E-01	-.681772E-01
1967	-.557710E-01	-.772690E-01
1968	-.659519E-01	-.864699E-01
1969	-.694407E-01	-.989644E-01
1970	-.976588E-01	-.118205
1971	-.650169E-01	-.865341E-01
1972	-.599335E-01	-.994567E-01
1973	-.137222	-.157740
1974	-.570958E-01	-.776133E-01
1975	.954560E-01	.749476E-01
1976	.150339E-01	-.448421E-02
1977	-.209488E-01	-.414569E-01
1978	.232437E-02	-.184937E-01
1979	-.447483E-01	-.652564E-01
1980	-.699478E-01	-.904663E-01
	1	2

TRANSPORT & COMMUNICATION

	EC66	ENC65
1962	-.182820	-.207316
1963	-.228440	-.253437
1964	-.454576E-01	-.714542E-01
1965	-.261577E-01	-.511546E-01
1966	-.136905	-.163992
1967	-.172420	-.197417
1968	-.969984E-01	-.121795
1969	-.100512	-.125509
1970	-.117480	-.142477
1971	-.930463E-01	-.118543
1972	-.826105E-01	-.107607
1973	-.435032E-01	-.584993E-01
1974	.549457E-01	.299429E-01
1975	.430350E-01	.160383E-01
1976	-.404371E-01	-.654317E-01
1977	-.207405E-01	-.457431E-01
1978	-.208580E-01	-.459647E-01
1979	-.730473E-01	-.103044
1980	-.799382E-01	-.104935
	1	2

	RECREATION		OTHERS		WORKING HOURS	
	EC77	ENC77	EC98	ENC98	EC99	ENC99
1962	-.143412	-.167253	-.736161E-01	-.109605	.376919E-01	-.671990E-01
1963	-.157358	-.181299	-.742968E-01	-.109794	.392769E-01	-.676010E-01
1964	-.153914	-.177765	-.813287E-02	-.429193E-01	.454537E-01	-.614263E-01
1965	-.127581	-.151432	.442147E-02	-.303655E-01	.472116E-01	-.596603E-01
1966	-.141082	-.164933	-.970575E-01	-.319546E-01	.478355E-01	-.560444E-01
1967	-.130726	-.154077	-.304777E-01	-.652643E-01	.279961E-01	-.769938E-01
1968	-.128531	-.152392	-.120240E-01	-.463110E-01	.351678E-01	-.717171E-01
1969	-.131172	-.155023	-.152361E-01	-.510231E-01	.542227E-01	-.525590E-01
1970	-.149738	-.173589	-.117789E-01	-.465550E-01	.678205E-01	-.390594E-01
1971	-.117153	-.141033	-.995061E-02	-.446377E-01	.550059E-01	-.560743E-01
1972	-.110549	-.134423	.356357E-04	-.347592E-01	.459232E-01	-.629567E-01
1973	-.153969	-.177820	.157703E-01	-.197169E-01	.417396E-01	-.651423E-01
1974	-.136193	-.130341	.355400E-01	.557992E-03	.372901E-01	-.695913E-01
1975	-.572460E-01	-.919971E-01	.577773E-01	.230103E-01	.417379E-01	-.630923E-01
1976	-.131410	-.125261	.453575E-01	.115705E-01	.351302E-01	-.706993E-01
1977	-.171354	-.195205	.458119E-01	.120249E-01	.339437E-01	-.727362E-01
1978	-.192417	-.176263	.349741E-01	.117045E-03	.395215E-01	-.177593E-01
1979	-.135735	-.159556	-.558152E-02	-.403685E-01	.574421E-01	-.494373E-01
1980	-.129197	-.153050	.973469E-02	-.250522E-01	.470234E-01	-.598565E-01
	1	2	1	2	1	2

Table '' . ITALY - Estimated short-run own price elasticities for single items of consumption and labour supply.

ITALY

TELES with linear trends for committed quantities

The Italian data have given very disappointing results. At the first stage, the dynamic components of the items of the first group are negligible. The committed quantities are all smaller than the demanded quantities for all the observations. On the other hand, the estimate of the second group presents great problems. Furniture, Transport and Other goods have committedd quantities larger than those effectively consumed for more than 10 observations. Accordingly the supernumerary income of the second group turns out to be negative over a large portion of the sample.

At the second stage therefore, the estimation gives a very unsatisfactory performance too. The committed quantity of the second group exceeds the supernumerary consumption at the beginning of the series and not even the negative trend of its dynamic component is sufficient to produce reasonable elasticities of these items. Moreover, the maximum working hours are lower than the effective working hours for more than 50% of the observations. The elasticity of labour supply has an incorrect sign in 1970 and is therefore meaningless.

TELES with proportional habit formation for committed quantities

Also in this case the Italian data cannot be adequately analysed by means of the TELES. This is due, like the model with linear trends, to the unsatisfactory behaviour of the items of the second group which (with the exception of Recreation) do not ensure long-run stability of the system. [The coefficients of the habit components in the demand equations must be less than 1. (See appendix to Chapter II)]. Too great committed quantities thus produce, after the estimation of the second stage, elasticities extremely low elasticities.

The labour supply curve is backward bending. Its non compensated elasticity is close to that usualy found by means of this kind of econometric model.

One observation can be added specifically for the Italian case. By contrast to these unsatisfactory results, in other studies it has been found that starting from more disaggregate data for private consumption of goods and services, the Pollack dynamic and multistage model turns out to be highly coherent with its theoretical postulates and reliable for forecasting. (See Tirelli-Liso (185))

Table III.6: BELGIUM a) Parameters of the TELES estimated at the I st stage (model with linear trends)

Items	Beta	Gamma1	Gamma2	D.W
I Group				
Food, beverages	0.314 (5.72)	58.507 (3.39)	0.00 (0.82)	1.40
Clothing	0.069 (1.62)	16.100 (1.84)	0.168 (0.52)	2.81
Housing	0.400 (9.11)	-0.162 (-0.28)	-0.005 (-1.35)	1.43
Health	0.216 (3.87)	1.937 (0.39)	77.277 (0.15)	1.41
II nd Group				
Furniture	0.316 (5.04)	47.461 (1.98)	-2.635 (0.02)	1.96
Transport	0.201 (4.60)	18.842 (2.22)	722.169 (1.78)	2.14
Recreation	0.082 (4.42)	3.516 (0.70)	413.014 (1.56)	1.79
Others	0.400 (7.90)	17.032 (2.88)	-554.822 (-0.66)	1.66
b) Parameters of the TELES estimated at the II nd stage				
I-st group	0.273 (7.06)	9.151 (1.96)	844.834 (4.96)	1.34
II nd group	0.392 (10.98)	-677.5 (-1.52)	-126.449 (-1.50)	2.21
Labour supply	0.182 (6.43)	2271 * (34.89)	0.001 (3.11)	1.10
Savings	0.153 (5.34)	———	———	1.41

* Maximum yearly working hours
** Parameter constrained to zero

Table, [illegible]BELGIUM: Non compensated and compensated own price elasticities.

	Non compensated		Compensated	
ITEMS	1970	1980	1970	1980
Food, beverages tobacco	-0.40	-0.45	-0.33	-0.37
Clothing	-0.27	-0.38	-0.23	-0.32
Housing	-0.90	-0.86	-0.78	-0.74
Health	-0.89	-0.80	-0.85	-0.77
Furniture	-0.15	-0.30	+0.05	-0.29
Transport	-0.27	-0.39	-0.16	-0.31
Recreation	-0.41	-0.46	-0.36	-0.40
Others	-0.73	-0.85	-0.44	-0.77
Labour supply	-0.08	-0.09	0.045	0.061

Table III.19 : BELGIUM a) Parameters of the Dynamic TELES (proportional habit formation). (R. is the correlation coefficient between actual and fitted percentage growth rate).

Items	Beta	Gamma1	D.W	R
Ist Group				
Food and beverages	0.317 (4.4)	0.799 (7.8)	2.25	0.40
Clothing	0.139 (2.2)	0.532 (2.4)	2.70	0.11
Housing	0.340 (6.3)	0.691 (6.6)	2.09	0.58
Health	0.173 (3.5)	0.735 (5.1)	2.00	0.23
IInd Group				
Furniture	0.319 (5.9)	0.133 (0.6)	1.85	0.55
Transport	0.255 (6.6)	0.103 (0.5)	2.28	0.62
Recreation	0.074 (4.9)	0.436 (2.5)	2.20	0.26
Others	0.351 (7.7)	-0.32 (-1.5)	1.62	0.82

b) Parameters of the TELES estimated at the IInd stage

Ist group	0.172 (7.0)	0.025 (0.83)	2.60	0.64
IInd group	0.492 (9.2)	0.0 (0.0)	2.31	0.69
Labour supply	(0.073) (0.9)	1.07 (8.14)	2.42	0.97
Savings	0.262 (6.07)	------	2.36	0.68

FOOD, BEVERAGES AND TOBACCO

	EC11	ENC11
1962	-.177557	-.252293
1963	-.207410	-.262143
1964	-.201139	-.255872
1965	-.208480	-.263213
1966	-.215168	-.269921
1967	-.229427	-.284163
1968	-.224684	-.279416
1969	-.212204	-.266936
1970	-.218547	-.273279
1971	-.215266	-.269998
1972	-.210964	-.265695
1973	-.211965	-.266717
1974	-.202296	-.257029
1975	-.178361	-.253094
1976	-.210529	-.265261
1977	-.192473	-.247205
1978	-.201237	-.255939
1979	-.213829	-.268561
1980	-.215955	-.270688
	1	2

CLOTHING

	EC22	ENC22
	-.474112	-.499163
	-.492932	-.516983
	-.478757	-.502816
	-.463906	-.487857
	-.483952	-.507903
	-.452911	-.466952
	-.489301	-.513432
	-.494070	-.508121
	-.458177	-.482229
	-.473984	-.519035
	-.503995	-.529046
	-.485409	-.509463
	-.490217	-.514268
	-.454579	-.488030
	-.436004	-.510056
	-.464014	-.488065
	-.450227	-.474278
	-.476539	-.500589
	-.482344	-.506395
	1	2

HOUSING

	EC33	ENC33
	-.317089	-.380849
	-.323365	-.387144
	-.290197	-.343957
	-.303927	-.367685
	-.312360	-.376120
	-.317119	-.380879
	-.327978	-.391737
	-.309693	-.373453
	-.305070	-.368829
	-.299775	-.362534
	-.330052	-.393811
	-.331590	-.395353
	-.295735	-.359495
	-.319933	-.383642
	-.327910	-.391549
	-.316065	-.379825
	-.322998	-.386757
	-.314769	-.378488
	-.295168	-.358928
	1	2

HEALTH

	EC44	ENC44
1962	-.294808	-.324793
1963	-.288971	-.318795
1964	-.265543	-.295458
1965	-.314134	-.344059
1966	-.279583	-.309503
1967	-.280225	-.310150
1968	-.317537	-.347461
1969	-.304653	-.334578
1970	-.304136	-.334061
1971	-.315642	-.345407
1972	-.330985	-.360911
1973	-.361385	-.391290
1974	-.324477	-.354402
1975	-.342394	-.372319
1976	-.338997	-.368822
1977	-.330222	-.360147
1978	-.313403	-.343327
1979	-.278619	-.308543
1980	-.265570	-.295493
	1	2

FURNITURE

	EC55	ENC55
	-.739276	-.992156
	-.737525	-.994305
	-.741083	-.997863
	-.739053	-.995833
	-.734583	-.991463
	-.733168	-.990048
	-.739035	-.995915
	-.740524	-.997504
	-.737845	-.994725
	-.740582	-.997463
	-.740414	-.997294
	-.744735	-.901615
	-.744055	-.900935
	-.732435	-.889285
	-.740131	-.997011
	-.738182	-.995062
	-.732289	-.889169
	-.732679	-.889559
	-.740272	-.997152
	1	2

TRANSPORT & COMMUNICATION

	EC66	ENC66
	-.788342	-.913687
	-.791495	-.917040
	-.793018	-.918559
	-.793999	-.919543
	-.792579	-.918124
	-.791053	-.916598
	-.793756	-.919301
	-.793353	-.918845
	-.787722	-.913268
	-.786373	-.910418
	-.793159	-.919723
	-.792374	-.917920
	-.787164	-.912709
	-.790396	-.916541
	-.793575	-.919120
	-.790573	-.916215
	-.789206	-.914791
	-.787759	-.913324
	-.784930	-.910475
	1	2

	RECREATION		OTHERS		WORKING HOURS	
	EC77	ENC77	EC88	ENC88	EC99	ENC99
1962	-.557140	-.593605	-1.10283	-1.27951	-.323345E-02	-.766011E-01
1963	-.550533	-.586999	-1.09702	-1.24283	.198036E-02	-.721475E-01
1964	-.558059	-.595453	-1.07537	-1.24814	-.107764E-02	-.743052E-01
1965	-.567687	-.613252	-1.07354	-1.25192	.324305E-02	-.599795E-01
1966	-.569876	-.606341	-1.08399	-1.25076	.434057E-02	-.684571E-01
1967	-.574493	-.610955	-1.09250	-1.26528	.985916E-02	-.633884E-01
1968	-.562127	-.599292	-1.07219	-1.24496	.134710E-01	-.599565E-01
1969	-.557069	-.593554	-1.06730	-1.24008	.135935E-01	-.599291E-01
1970	-.556659	-.603124	-1.07627	-1.24895	.191273E-01	-.551004E-01
1971	-.562552	-.599017	-1.07165	-1.24493	.150179E-01	-.573697E-01
1972	-.577882	-.614347	-1.06192	-1.23473	.209570E-01	-.522707E-01
1973	-.582269	-.618753	-1.04959	-1.22267	.422355E-01	-.309371E-01
1974	-.580966	-.617331	-1.09203	-1.26495	.243243E-01	-.489034E-01
1975	-.550352	-.586517	-1.11360	-1.28638	.339302E-01	-.393214E-01
1976	-.581735	-.618473	-1.07919	-1.25197	.332915E-01	-.399461E-01
1977	-.576534	-.613070	-1.07152	-1.24429	.274114E-01	-.458152E-01
1978	-.557123	-.633593	-1.07676	-1.24953	.171139E-01	-.561133E-01
1979	-.559390	-.605853	-1.06939	-1.24117	.374934E-02	-.692787E-01
1980	-.554719	-.601196	-1.09507	-1.26785	.796526E-02	-.652514E-01
	1	2	1	2	1	2

Table III.20: BELGIUM - Estimated short-run own price elasticities for single items of consumption and labour supply.

BELGIUM

TELES with linear trends for committed quantities

At the first stage the model does not corroborate any hypothesis of dynamism for the committed quantities. Therefore it collapses into the static version. Furniture does not respect the condition of its committed quantity for the first 9-10 observations.

The labour supply has elasticities which are close to those estimated by means of different approaches. The maximum working hours are higher than the effective working hours over for all the observations.

TELES with proportional habit formation for committed quantities

The results given by this model, for this country, are similar to those obtained for Germany and the United Kingdom. Globally they confirm the existence of different elasticities for the two groups. Food, Health, and Housing are linked to their past consumption. On the contrary, Clothing is more sensitive to its relative price and less influenced by habit.

The labour supply elasticity is always negative and its values are among the highest of the European countries.

Table III.21: GREECE a) Parameters of the TELES estimated at the Ist stage (model with linear trends)

Items	Beta	Gamma1	Gamma2	D.W
I Group				
Foods and beverages	0.414 (8.41)	20514 (6.83)	1.010 (2.29)	1.96
Clothing	0.277 (4.48)	-923 (-0.41)	-123 (-0.61)	2.40
Housing	0.222 (8.84)	0.004 (0.63)	0.003 (0.66)	2.06
Health	0.086 (6.18)	-278.4 (-1.01)	-35.4 (-0.94)	1.70
II nd Group				
Furniture	0.226 (7.09)	4,047 (2.42)	—— **	2.01
Transport	0.362 (9.40)	4,830 (6.46)	-216 (0.24)	1.28
Recreation	0.142 (6.03)	-527 (-0.49)	196 (3.69)	2.30
Others	0.263 (4.21)	1,655 (0.91)	—— **	2.12

b) Parameters of the TELES estimated at the II-nd stage

I st group	0.186 (3.11)	8116 (3.51)	358 (3.52)	1.26
II nd group	0.373 (3.39)	0.10 (0.32)	-0.02 (-0.80)	1.96
Labour supply	0.109 (14.07)	2,370* (25.40)	-0.0004 (-2.91)	1.91
Savings	0.340 (12.24)	——	——	2.07

* Maximum yearly working hours
** Parameter constrained to zero

Table III.22. GRECE: Non compensated and compensated own price elasticities.

	Non compensated		Compensated	
ITEMS	1970	1980	1970	1980
Food, beverages tobacco	-0.10	-0.30	-0.02	-0.22
Clothing	-0.94	-0.98	-0.89	-0.91
Housing	-0.82	-0.82	-0.77	-0.78
Health	-1.16	-1.26	-1.14	-1.25
Furniture	-0.35	-0.63	-0.34	-0.55
Transport	-0.61	-0.97	-0.48	-0.83
Recreation	-1.03	-1.02	-0.97	-0.97
Others	-0.88	-1.02	-0.77	-0.92
Labour supply	0.004	-0.08	0.096	0.176

Table III.23 : GREECE a) Parameters of the TELES with proportional habit formation.
(R. is the correlation coefficient between actual and fitted percentage growth rate).

Items	Beta	Gamma1	D.W.	R
Ist Group				
Food and beverages	0.641 (26.3)	0.359 (3.0)	1.20	0.74
Clothing	0.169 (6.7)	0.243 (1.5)	2.30	0.56
Housing	0.143 (15.3)	0.343 (4.2)	0.90	0.56
Health	0.046 (8.4)	0.304 (2.8)	1.13	0.92
IInd Group				
Furniture	0.334 (12.0)	0.256 (1.7)	1.51	0.63
Transport	0.303 (11.4)	0.309 (2.5)	1.45	0.82
Recreation	0.116 (6.1)	0.266 (2.6)	2.67	0.38
Others	0.246 (11.3)	0.162 (1.1)	2.08	0.82
b) Parameters of the TELES estimated at the IInd stage				
Ist group	0.376 (10.9)	0.09 (0.80)	1.65	0.63
IInd group	0.240 (12.5)	0.0 (0.0)	1.13	0.79
Labour supply	0.028 (1.02)	1.06 (18.1)	2.30	0.96
Savings	0.356		1.73	0.66

FOOD, BEVERAGES AND TOBACCO

	EC11	ENC11
1962	-.503352	-.744685
1963	-.499831	-.740965
1964	-.504758	-.745892
1965	-.511326	-.752460
1966	-.512042	-.753176
1967	-.508471	-.749605
1968	-.503018	-.744152
1969	-.502856	-.743990
1970	-.501270	-.742404
1971	-.499164	-.740298
1972	-.498706	-.739843
1973	-.503774	-.744907
1974	-.495008	-.736142
1975	-.492837	-.733971
1976	-.494370	-.735504
1977	-.495339	-.736473
1978	-.502195	-.743332
1979	-.495449	-.736583
1980	-.491102	-.732235
	1	2

CLOTHING

	EC22	ENC22
	-.739151	-.802726
	-.727565	-.791143
	-.750980	-.814556
	-.752678	-.816253
	-.734151	-.797726
	-.712535	-.776113
	-.736076	-.799652
	-.735352	-.798928
	-.764402	-.827977
	-.753407	-.816982
	-.733862	-.797437
	-.728792	-.792367
	-.706567	-.770142
	-.719986	-.783561
	-.728857	-.792432
	-.720010	-.783585
	-.710294	-.773869
	-.712546	-.776121
	-.717296	-.780871
	1	2

HOUSING

	EC33	ENC33
	-.646326	-.709123
	-.647991	-.701788
	-.648770	-.702564
	-.652355	-.706149
	-.656125	-.709919
	-.656892	-.710685
	-.654065	-.707860
	-.659594	-.713388
	-.657340	-.711135
	-.657264	-.711059
	-.656698	-.710492
	-.659816	-.713613
	-.645185	-.698979
	-.635137	-.688931
	-.637531	-.691326
	-.645990	-.699784
	-.647247	-.701041
	-.640637	-.694431
	-.642082	-.695875
	1	2

HEALTH

	EC44	ENC44
1962	-.646668	-.666358
1963	-.709530	-.727211
1964	-.741839	-.759543
1965	-.745402	-.763083
1966	-.744873	-.762554
1967	-.758511	-.776192
1968	-.769260	-.786941
1969	-.763093	-.780774
1970	-.749184	-.766865
1971	-.725702	-.743383
1972	-.691431	-.709112
1973	-.685681	-.703362
1974	-.656939	-.686620
1975	-.652953	-.700633
1976	-.653661	-.681342
1977	-.686341	-.704022
1978	-.693330	-.711011
1979	-.698557	-.716238
1980	-.694739	-.712420

FURNITURE

	EC55	ENC55
	-.709731	-.789843
	-.706633	-.786751
	-.714414	-.794531
	-.711166	-.791284
	-.709357	-.789475
	-.713061	-.793179
	-.711819	-.791937
	-.711629	-.791747
	-.719950	-.800368
	-.717430	-.797518
	-.721966	-.802084
	-.728711	-.808829
	-.689173	-.769291
	-.696223	-.778341
	-.711773	-.791899
	-.706000	-.786118
	-.692931	-.773049
	-.692681	-.772799
	-.685402	-.765523
	1	2

TRANSPORT & COMMUNICATION

	EC66	ENC66
	-.693861	-.756543
	-.677400	-.750092
	-.678034	-.750775
	-.676035	-.748717
	-.683967	-.756669
	-.678016	-.750679
	-.686137	-.758818
	-.685386	-.758068
	-.681201	-.753883
	-.687577	-.760259
	-.690578	-.763260
	-.686272	-.758954
	-.657995	-.730677
	-.664257	-.736938
	-.685069	-.757751
	-.702570	-.775252
	-.686554	-.759236
	-.647938	-.720620
	-.623042	-.695724
	1	2

	RECREATION		OTHERS		WORKING HOUR	
	EL77	EN77	EL88	EN88	EL99	EN99
1962	-.739459	-.767294	-.803971	-.963230	.713390E-01	.433990E-01
1963	-.752424	-.780249	-.805713	-.964361	.798755E-01	.519356E-01
1964	-.735070	-.762695	-.815737	-.974955	.526701E-01	.247303E-01
1965	-.736284	-.762109	-.804748	-.963497	.526624E-01	.247274E-01
1966	-.744073	-.771679	-.806744	-.965903	.692443E-01	.413044E-01
1967	-.736578	-.764404	-.810433	-.869692	.550341E-01	.270541E-01
1968	-.733925	-.761051	-.802359	-.962057	.503038E-01	.223606E-01
1969	-.746238	-.774053	-.790476	-.957724	.526522E-01	.247222E-01
1970	-.726501	-.755385	-.813423	-.972672	.555969E-01	.804699E-02
1971	-.733280	-.761105	-.814450	-.973099	.585150E-01	.305759E-01
1972	-.729715	-.757541	-.808795	-.969244	.574198E-01	.224798E-01
1973	-.703369	-.731214	-.806111	-.965360	.714775E-01	.435375E-01
1974	-.711035	-.739912	-.786463	-.959771	.644031E-01	.364692E-01
1975	-.728739	-.755565	-.802274	-.951523	.814677E-01	.535293E-01
1976	-.724957	-.749682	-.808415	-.967666	.693130E-01	.613733E-01
1977	-.732937	-.760552	-.799283	-.858592	.687366E-01	.409456E-01
1978	-.745595	-.773520	-.795373	-.959622	.624229E-01	.344679E-01
1979	-.700600	-.729425	-.796196	-.955445	.536975E-01	.257475E-01
1980	-.694410	-.722236	-.795944	-.949193	.551833E-01	.262433E-01
	1	2	1	2	1	2

Table III.24. GREECE - Estimated short-run own price elasticities for single items of consumption and labour supply.

GREECE

TELES with linear trends for committed quantities

Also for this country there have been problems in estimating the second group's system at the first stage. Furniture violates the condition of the committed quantities for the first 8 observations. Also 4 initial observations of Transport and Communication present committed quantities higher than the demanded quantities, but their decreasing trend ensures that the elasticities of this item are close to their expected values at the end of the period. Globally the items of the second group tend to assume the nature of quasi-luxury consumption with a non compensated elasticity of around 1.

The maximum feasible working hours are always higher than those effectively worked.

TELES with proportional habit formation for committed quantities

Greece shows a substantial uniformity of habit effects for all kinds of consumption. As a matter of fact the items of the first group have relatively weak "memory" coefficients. Furthermore Greece is characterised by another particular feature: the labour supply curve turns out to be positively sloped. The very low propensity to enjoy leisure does not permit a sufficient rescaling downwards of the ratio between maximum working hours and effectively worked hours to give negative elasticities (see formula 3.32.1). Therefore Greece appears, from this viewpoint, to have a structure of preferences rather different from that of the other European countries. This conclusion however should be treated with caution because it is strictly linked to the model chosen.

3.8: Some comments on the empirical results

The results obtained by means of Dynamic Multistage Allocative Models Twice Enlarged allow us to derive conclusions similar to those of other already mentioned studies.The more complex specification that has been chosen, partly solves some customary problems of the expenditure systems. This approach is also open to further analytical improvements. As a matter of fact its potentiality becomes more evident when one introduces a higher level of disaggregation. However the choice regarding dynamic effects is particularly crucial for the final results regarding individual labour supply. Each model applied to the same data gives such different estimates, that to infer normative suggestions for the labour market is quite difficult and when one leaves the framework of static allocative models, the interactions between labour supply and consumption become increasingly uncertain.

In this study two different functional forms have been applied.For the first more rigid approach the results are not very satisfactory.For the second one they are not exceptionally good. As regards the **hypothesis of committed quantities depending upon linear trends** there are several disappointing conclusions to derive. First of all its greatest defect is the frequent violation of the budget constraint. In some cases a partial remedy is that of constraining some trend components to zero , but, for some countries, the violation of the budget constraint is so wide that the plausibility of the model is thereby weakened, (Italy, in particular, shows this negative peculiarity). Brown and Heien have suggested that these models could be saved if one assumes that , when the conditions of the committed quantities are violated, the consumer's preferences are of the "Leontief" type. In other words, the various quantities of goods and services are bought in "fixed proportions" (independent of prices) given by the ratios of the committed quantities up to the points where the conditions are violated. However such an economic interpretation is rather weak. The representative consumer-worker would have begun to enjoy his freedom to choose during the second half of the 1960's. But when it is possible to extend the statistical information backwards in time the estimated committed quantities turn out to be lower.

Furthermore committed quantities linearly dependent on time, imply patterns of growth that appear rather implausible when they are extended out of the sample of available observations. It is trivial to observe that the estimated trends depend on the period covered by the time series. The 1950's and the 1960's saw very regular rates of growth of consumption and a very regular decline in working hours, (at least at the level of aggregation considered here). However, during the 1970's, there was a fall of consumption and working hours corresponding to the first oil crisis. After this event there was a change in the trends of growth of income and consumption. A model based on linearly growing or decreasing committed quantities thus leads to an over (or under-) estimation of supernumerary income at the beginning or at the end of the period examined. The patterns of consumption of European countries imply structural changes that , cannot be captured by means of such functional forms. The problem unfortunately does not allow for many solutions at present. The degrees of freedom offered by the National Accounts series on private consumption do not allow us to build different models by splitting the sample and testing the existence of structural changes. Given that the parameters of the committed quantities capture the information contained in relative prices it is obvious that imposing a strong constraint on them would undermine their statistical

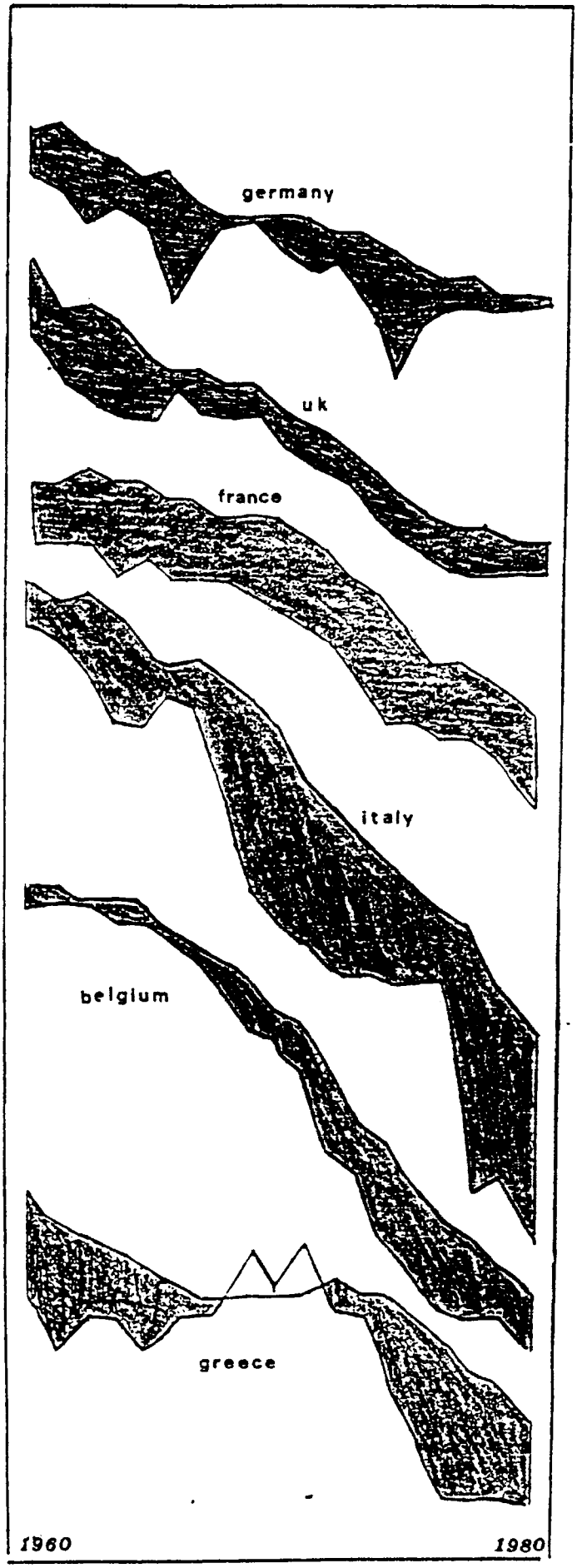


FIG. III.9: Maximum working hours and worked hours (model with prop. habit form.)

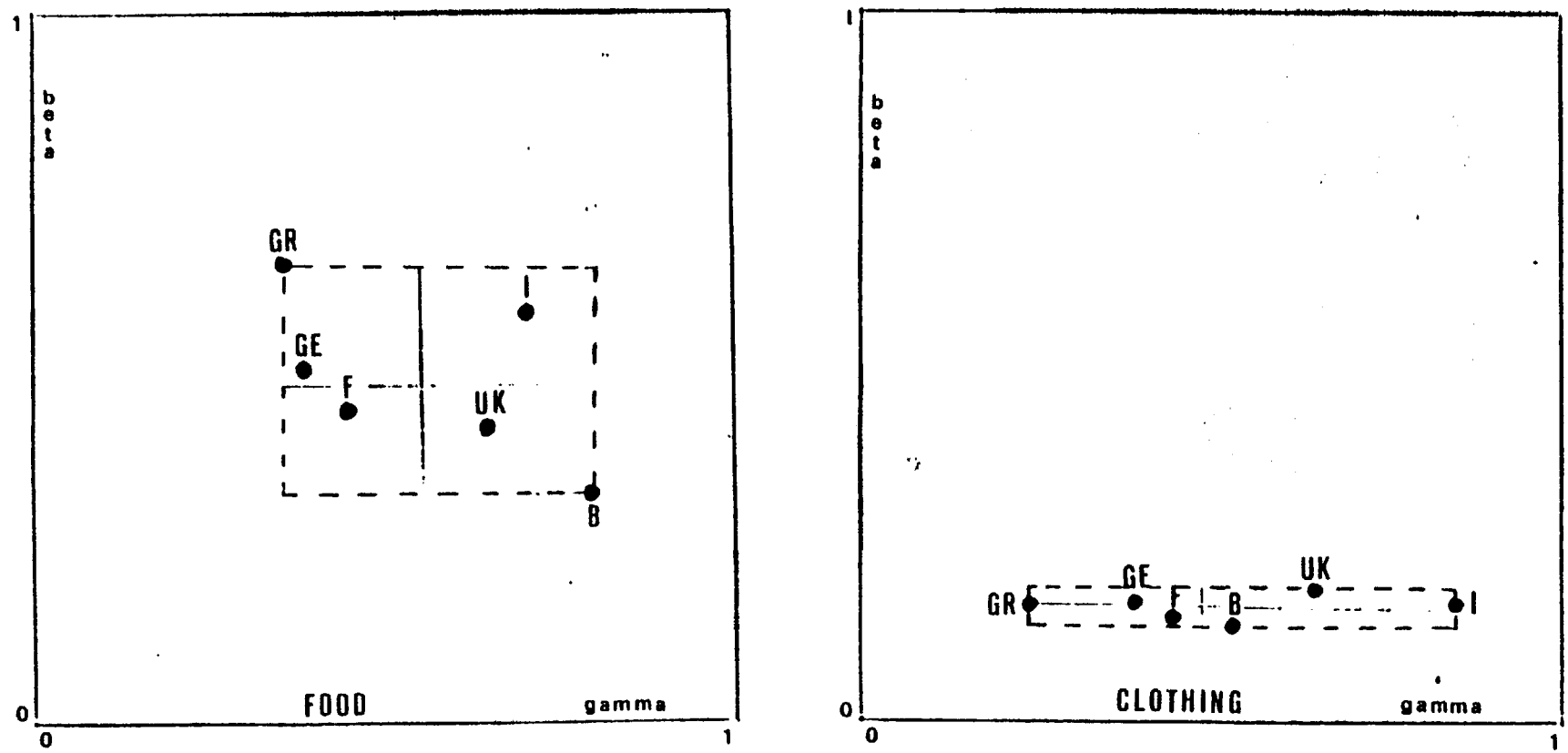


FIG. III.10: A comparison of the estimated marginal propensities to consume B and the coefficient of habit formation , for the six European countries.

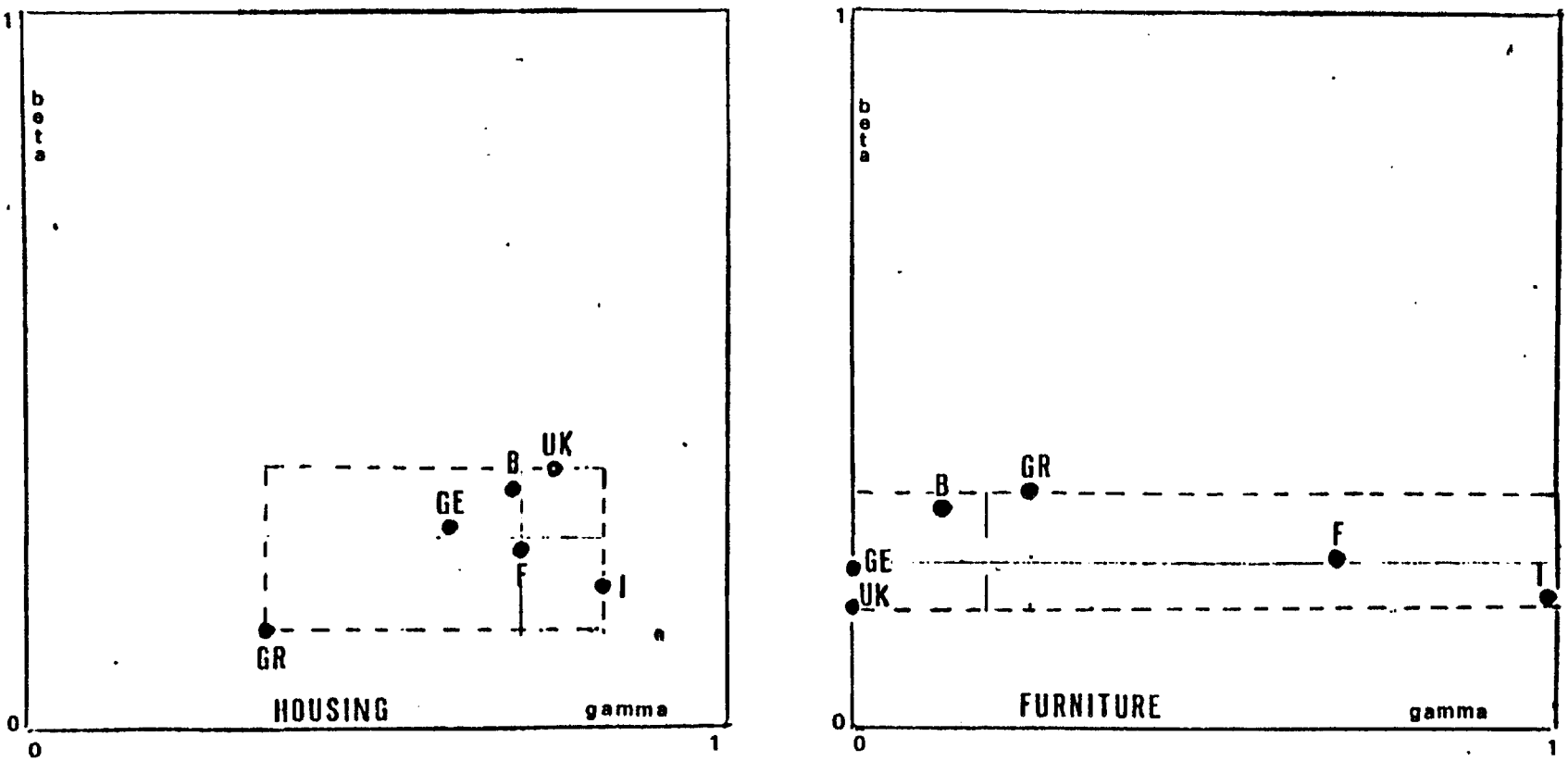


FIG.III.11: A comparison of the estimated marginal propensities to consume B and the coefficient of habit formation , for the six European countries.

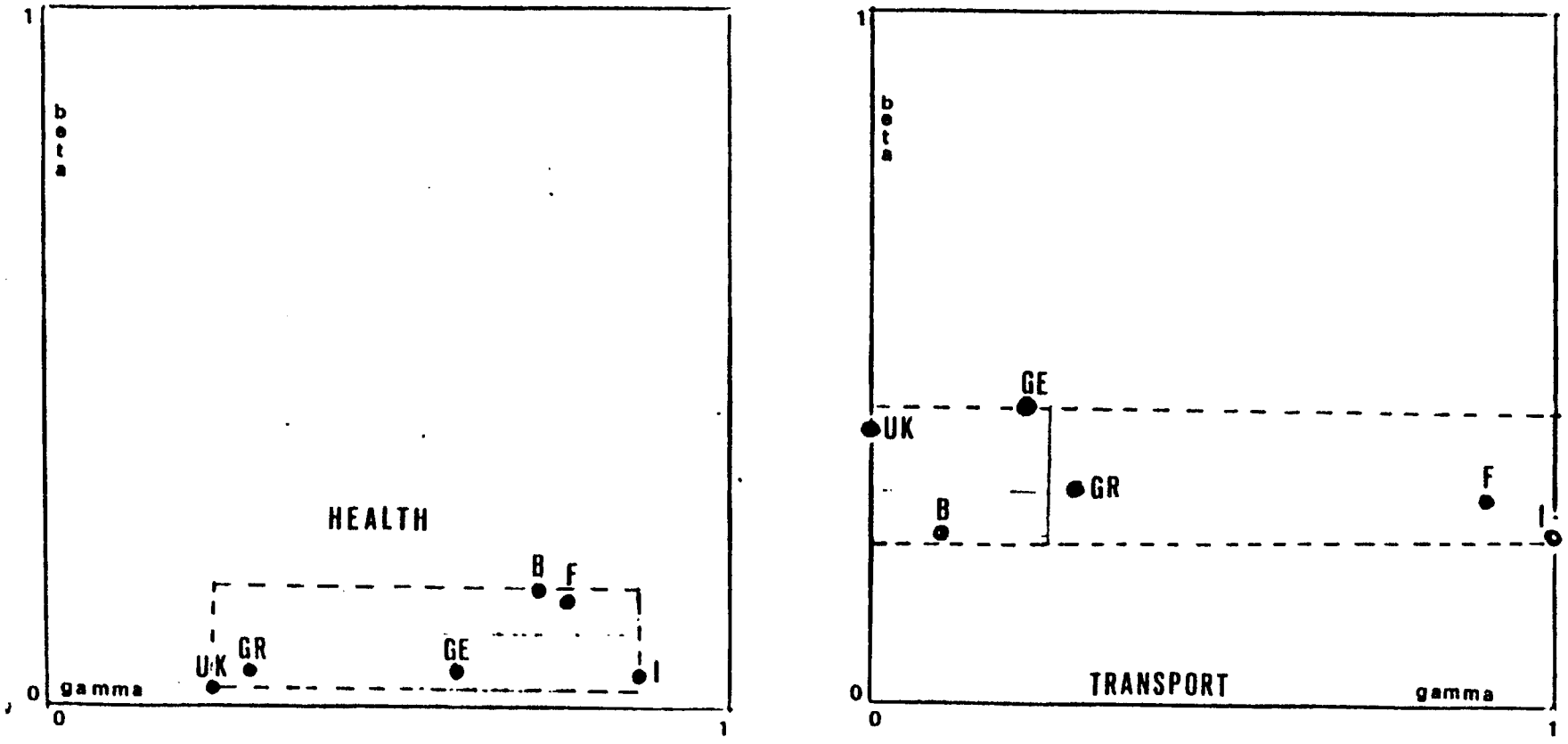


FIG. III.12: A comparison of the estimated marginal propensities to consume B and the coefficient of habit formation , for the six European countries.

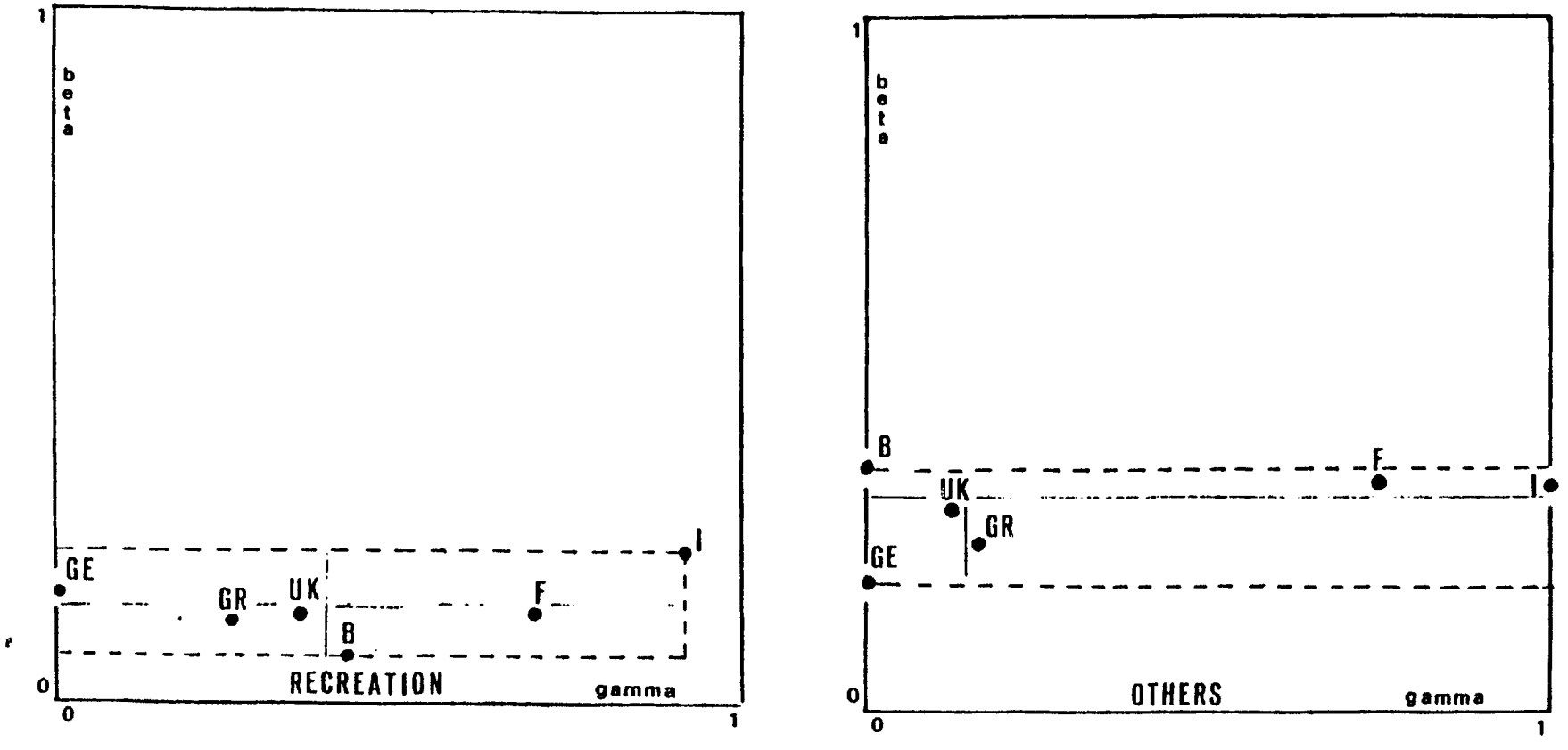


FIG. III.13: A comparison of the estimated marginal propensities to consume B and the coefficient of habit formation , for the six European countries.

significance. As a matter of fact a good percentage of those parameters turn out to be not significantly different from zero (in the ligth of the T-test). In any case, in favour of this simple dynamic specification it could be added that it is superior to the purely static models. In fact the Likelihood Ratio test applied to static and dynamic models with linear trends has demonstrated that in many cases the explanatory contribution of the added terms is not negligible.

In connection with habit formation models it is possible to detect some peculiar and positive characteristics of such a flexible dynamic specification. The introduction of adaptive committed quantities produces relevant changes in the structure of the estimated parameters. Such a dynamic specification solves and, at the same time, presents several problems. On the positive side there are more realistic evaluations of the supernumerary quantities. The committed quantities adapt themselves more or less quickly to new levels of consumption, the budget shares of supernumerary income remain more stable and the marginal propensity to consume can be estimated more correctly. As regards labour supply, the maximum working hours assume realistic values which depend on a strong habit effect. The short-run elasticities are also rather stable over the whole period.

Secondly, the theoretical coherency of the model is nearly complete (the sole exception once more being Italy). For all the remaining countries the committed quantities are smaller than the demanded quantities and the coefficients of habit formations ensure long-run stability. Thirdly, the adaptability of the data appears relatively good in comparison to other models.

On the negative side, one has to mention the degree of arbitrariness that is always related to the choice of a habit formation mechanism. The results are rather sensible to the adaptive mechanism in particular as far as labour supply is concerned. For instance, the function which has been applied in this study (a two period moving average) reduces the valued leisure to very small quantities, in particular for those countries like the United Kingdom, where working hours have been decreasing slowly and very regularly. The habit formation coefficient in fact explain by itself the change in working time. But even if this can be considered a statistical explanation it is certainly not an economic one. The question is always: what causes of this change of habits? Further research should focus on the possibility of introducing demographic and social determinants.

The computed own and cross price elasticities of labour supply turn out to be lower than those obtained by means of static models. We must keep in mind that the model tries to explain the time series of the weekly working hours. But this datum is only a very vague proxy for individual labour supply. Relevant effects exist also arising from over-time, vacations, part-time, etc., so that the variance of individual labour supply is higher than that of the officially registered data. The problem is once more that of an unsatisfactory measurement of the phenomenon. In conclusion, even though the marginal propensities to spend full income on leisure are generally very imprecise,(the T-test is unsatisfactory), the calculated elasticities (both compensated and non-compensated) are not very far from other former results. The consumption of leisure in the six European countries is compared in Fig.III.9.

The evaluation of the marginal propensity to save is more difficult. Saving has been introduced for the sake of theoretical elegance and to test whether intertemporal hypotheses radically changed the results of the expenditure system. The models presented here employ supernumerary full income, which in turn depends upon the trends of the committed quantities. Saving, which

is set aside at the second stage, covers a great share of such a supernumerary income so that its marginal propensity appears very high too,, when the committed quantities are particularly high with respect to consumed quantities. The values of these marginal propensities are distributed over a wide range (from 0.15 (Germany) to 0.41 (Italy)).

Something must also be said about globally comparing the results obtained for the six European countries. Fig.III.10, III.11, III.12, III.13, compare the estimated marginal propensities to consume and the habit formation coefficients. In these figures clear patterns of consumption are not evident. There is no particular relationship among the parameters of the different countries. The sole regularity is that of the Italian case which always shows the highest coefficients of habit formation. This result however derives, as has already pointed out, from the bad performance of the econometric model. France also shows surprisingly high habit coefficients. The remaining countries on the other hand have close values which are randomly distributed.

The marginal propensities to consume do not follow a clear pattern. Propensity to consume Food is obviously higher in Greece and in Italy. Housing and Transport propensities are widely distributed. In the first case this is the consequence of different statistical criteria. Moreover Housing, as is well known, is not totally ruled by market rules in many countries. The comparison is therefore very difficult. As regards Transport, Greece shows a surprisingly high propensity. This is probably due to the first phase of a massive diffusion of the private transportation that in other European countries has already been experienced.

From the viewpoint of international comparisons, the dynamic model presented here does not offer many suggestions. Probably the descriptive statistics utilized in studies of social economics, like those of Gardes (67) and Levy-Garboua (102), are more reliable. But perhaps very disaggregate expenditure systems could give more interesting results in this regard.

Individual labour supply and leisure consumption on the other hand appear to follows more regular trends. The exception is Greece, precisely in those years when labour relations were modified by an authoritarian political management. For all the European countries the existence of a negative relationship between income, wages and working hours is not rejected.

CONCLUSIONS

The essays collected in this work allow us to draw some general conclusions. A century after the edition of W.S.Jevons' works we are still facing the impact of his intellectual revolution in many fields of economic theory. Labour economics and the theory of consumption are two topics where this revolution is still producing great effects. The utilitarian theory overturned the former cocept of labour as the real measure of value. Wages were seen as the shares of produce that the law of supply and demand enabled the worker to secure. From this point of view the labourers, far from being passive instruments of capitalist production, had, at least partly, a monopoly on labour of each specific kind. This kind of monopoly was limited by the strength of competition among a great number of workers [E.F.Paul (I.198)]. When such competition was strong enough, wages turned out to be the effect and not the cause of the value of the produce.

This new paradigm destroyed the basic assumptions of the wage-fund theory and those of an "iron-law" of a perpetual subsistence status for some social classes. Jevons also rejected the idea of a fundamental homogeneity of labour input. Each job and profession had its own remuneration determined through market processes. As a consequence the distinction between productive and unproductive labour disappeared. All kinds of labour were productive when they satisfied wants by producing utilities and only the market could give the final answer on the value of labour. These premises enabled the subsequent neoclassical theory to reconcile the double function of workers and consumers. Workers were assumed to be at least partly free to choose their ways of life and the interest of economic theory was re-oriented from the problem of income distribution towards consumption activity and the function of the market.

Jevons (as well as Gosssen and other earlier utilitarian economists) can perhaps be classified among S.Koestler's "sleepwalkers" (I.143). Starting from the observation of the middle classes' economic and social behaviour, they abandoned the apparent obviousness of the historical and demographic laws of classical economic thought and built a new conceptual construction on mere psychological assumptions. This turning point seems very similar to those of the history of other scientific fields. It marks the interruption of the growth of very solid theories to restar from radically different postulates

> "The syptom that a particular branch of science or art is ripe for a change is a feeling of frustration and malaise not necessarily caused by an acute crisis in that specific branch (...) but by a feeling that the whole tradition is somehow out of step, cut off from the mainstream, that the traditional criteria have become meaningless, divorced from living reality,isolated from the integral whole." [A.Koestler (I.143)]

The new paradigm of a rational maximising calculus concerned with pleasure and pain, and extended to every individual economic agent, was a reflex of the late XIX century consciousness of an evident progress both in the standard of living and in individual freedom. However, as is typical of every scientific revolution, extraordinary and unsuspected difficulties soon arose. Nevertheless the new theory was quite flexible and susceptible to incorporate new facts into itself and (after a relatively long period) to open the way to an extensive mathematical formalization and statistical measures.

The growing popularity of the neoclassical approach is linked to the

growth of capitalist economies which contributed to the numerical growth of industrial workers and middle classes components. At the beginning of the XXth century the adoption of the eight hour day and the spreading of higher and diversified standards of living, confirmed Jevons' intuition about the new psychological dimension of economic choices and preferences.

In the First Part of this work it has been shown that practically all the issues which we are presently coping with were contained, at least in embryonic form, in the earlier works of the utilitarian economists, To underline the importance of micro-foundations of labour supply and consumption theory for the present debate, let us take some examples. When Western economists try to understand the reasons for the astonishing economic growth of Japan, they find suggestions in macroeconomic theories, but certainly there is much more of interest in the micro-economic theory of the labour market.

When FIAT's managers planned to produce and sell hundreds of thousands of small cars in Italy, in a period when the price of a small car was close to twice the yearly wage of their white or blue collar workers, they strongly believed (perhaps more than in macroeconomic determinants) in demonstrative effects both in individual consumption and labour supply. As a matter of fact the desire to attain higher standard of living and enjoy conspicuous consumption was accompanied by higher labour productivity, greater intensity of effort and a growing participation rate in the industrial labour market. The "Italian economic miracle" was not a consequence of particularly clever macroeconomic policies, but above all of the right combination of dynamic consumption trends and a flexible labour market. The study of the Italian households' preferences for leisure and consumption in the Second Part of this work, basically supports this view. A big change in the demand for leisure can be detected at the beginning of the 1970's. During the 1950's and 1960's, Italy had the highest avergae working hours in Europe. At the beginning of the 1980's the Italian working hours were among the lowest. In the same period one can also notice a change in the growth rate of the consumption of durables and semidurables. Experience suggests that one must be very cautious in detecting "saturations levels" in household consumption. Products follow life cycles that are very difficult to define and measure. Yet there are sufficient arguments to support the thesis of a direct relationship between past attitudes towards working effort and standards of consumption in Italy (and, with some differences, in other European countries). The Italian industrial workers, at the end of the sixties, no longer accepted night work, job-work and control on hourly productivity. they also asked for a sensible and immediate shortening of working hours and longer vacations. If they had not a taste for leisure they could have simply asked for higher hourly wages and no compulsory reduction of working time and relaxation in labour intensity. The neoclassical scheme of joint allocation of leisure and consumption explains these events as a result of a maximising calculus which satisfies complex preferences. If we do not accept this approach we remain completely deprived of interpretative instruments and we cannot understand some of the most important social and economic changes of our age. From this point of view the suggestions that we can find in minor works of some great economists are rather disappointing. Keynes , (but also Marshall), for instance, thought that economic growth would produce less inequality in income distribution and that higher income for many would orient men towards "inexpensive" leisure: more time for education, reading, enjoying art and music, sporting, etc.). Keynes's adversion to the hypothesis of an hedonistic calculus of rational individual agents in their economic

activity was however misleading. Economists discovered that the household is the basic economic unit on both the consumption and the labour supply side. They also realized that households are capable of adopting sophisticated and multiple strategies to maximise their collective utilities. Households not only autonomously produce goods and services, but also look for economies of scale when they organize their consumption and their leisure. Households also save, invest and accumulate with growing ability. Economic activity and social policy are therefore perhaps less interested in general macroeconomic laws on saving and consumption than oriented towards disaggregate and detailed information. Yet, even if one accepts the neoclassical paradigm, things are not at all simple and clear.

Since World War II, after the three fundamental contributions of L.Robbins (who re-stated the question in rigorous theoretical terms), P.Douglas (Who opened the way to empirical studies), and J.Hicks (who formalized the problem in mathematical terms), the neoclassical theory of labour supply has been enriched by a huge amount of studies. It is usual to distinguish between two generations of models. The first one is that of static models based on "ad hoc" functions which are concerned with working hours and participation rates. The econometric models specified in such a way were however affected by many problems of estimation and their explanatory variables were restricted to a few general macroeconomic determinants. Furtermore the estimated parameters of those models appeared so widely spread that no general conclusion could be derived from them.

The second generation of models concentrated on the efforts to obtain better specifications: (i) by introducing precise utility functions that had to be maximised under external constraints and (ii) by enlarging the number of arguments of such functions. taxes, schooling, fertility, life cicle hypothesis, costs connected with labour activity, labour mobility, etc.; (iii) by building (besides static models), dynamic models which elegantly described particular hypotheses about habit and stock formation. This extensive research however has made the need for a general synthesis more acute and at the same time more difficult to attain. At present the neoclassical aproach cannot coherently treat all the aspects of labour supply simultaneously. The model focus on specific problems of labour supply. We might conclude, as usual, that "more research is needed", but some other reflections can be added.

The first observation regards the aim of future research. It should be clear that the problem is not (only) that of a greater econometric complexity. Without more detailed and precise information the ability to introduce new functional forms, to minimise statistical biases, to discover better proxies for roughly measured variables will be limited. The trick adopted in the econometric exercises here presented (and suggested by Abbott-Ashenfelter) to avoid a direct measure of leisure, for instance, cannot be applied to more detailed models. On the contrary econometric methods would be applicable to more disaggregate models if sufficient information were available. An ideal model should admit both substituibility and complementarity among goods and leisure and among different kind of leisure. Moreover it should refer to households, not to individual agents. But in order to be workable this ideal model should be based on direct measures of leisure time, and domestic production, and on detailed a nd simultaneous measures of stocks and flows of consumption goods. Perhaps the new methods of collecting statistical information will enable us to have reliable data on individual labour supply and leisure in the near future.

The second observation concerns the philosophy of this kind of research and its normative content. There exists a strange attitude in judging

neoclassical model of labour supply. The basic hypothesis of these models is that the labourer is free not only to chose but also to offer. Nothing compels the butcher to sell all the meat contained in his freezer. But no dependent worker can offer his services in variable quantities (daily or yearly). The majority of workers must offer their services within narrow hourly limits. However, while the limits on the maximum working hours do not alter the necessary condition of convexity of the budget constraint, minimum standardized workinghours have disruptive effects on the coherency of the usual neoclassical approach. Little attention has been devoted to this fact. The neoclassical scheme shows that in the presence of a discontinuous and non-convex budget constraint the probability of suboptimal choices and "corner positions" could become very high. We can derive from this a first important normative suggestion for labour policies. If standardized hours produce suboptimal choices in the labour market, it should be rational, before trying to understand the effects of economic policies on labour supply, to look for maximum market efficiency. If we believe that workers have something to gain by deciding the amount of labour services supplied, then none could be a better judge than themselves. Without putting forward extreme and unrealistic solutions of complete flexibility of working hours and weeks, one can conclude that every solution that makes the standard working time as flexible as possible is a substantial improvement for a rational allocation of work.

The second suggestion regards the correct interpretation of the allocative models that have been proposed here. They can be used to analysize only very general trends. As has been said, one should be very cautious about international comparisons because both differences and similarities cannot be justified by clear and detailed socio-economic causes. The existence of a different diffusion of part-time jobs, of different rates of participation, for men and women, and for productive sectors, is very important and could lead to misleading conclusions.

It is doubtful however that further refinements are possible without more precise statistical information. Only when we have a direct knowledge about the use of non-working time among the components of the households and information on many aspects of labour supply, (such as daily hours, weeks in the years and years in the life cycle) will be possible to study a "third" generation of models. These new models may ensure a first synthesis of what are nowadays seemingly unrelated aspects of individual and aggregate labour supply. We recognize the importance of the question, but we are also conscious that easy answers do not presently exist and that they will not be easily found.

SECOND PART: REFERENCES

(1) Abbott M. - Ashenfelter O.
"Labor Supply, Commodity Demand and the Allocation of Time"
Review of Economic Studies, Vol. 43, (1976), p. 389

(2) Arrow K.
"The Future and the Present in Economic Life"
Economic Enquiry, Vol. XVI, (1978), p. 157

(3) Ashenfelter O.
"Unemployment as Disequilibrium in a Model of Aggregate Labor Supply"
Econometrica, Vol. 42, n. 3, (1980), p. 547

(4) Ashenfelter O. - Heckman J.
"The Estimation of Income and Substitution, Effects in a Model of Family Labor Supply"
Econometrica, Vol. 42, n. 1, (1974)

(5) Atkinson A.B. - Stern N.
"On Labour Supply and Commodity Demand"
in: Deaton A. (ed.), "Essays in the Theory and Measurement of Consumer Behaviour", Cambridge University Press, New York, (1981)

(6) Barnett W.A.
"Consumer Demand and Labour Supply"
North Holland, Amsterdam (1981)

(7) ----------
"The Joint Allocation of Leisure and Goods Expenditures"
Econometrica, Vol. 45, (1979), p. 1117

(8) --------
"The Theoretical Foundations of the Rotterdam Model"
Review of Economic Studies, Vol. 46, (1979, p. 109

(9) Barten A.
"Consumer Demand Functions under Conditions of Almost Additive Preferences"
Econometrica, Vol. 32, (1964), p. 1

(10) --------
"The System of Consumer Demand Function Approach"
Econometrica, Vol. 45, (1977), p.23

(11) ---------
"Maximum Likelihood Estimation of a Complete System of Demand Equations"
European Economic Review, (1969), Vol. 1, p.7

(12) --------

"Complete System of Demand Equations: Some Thought about Aggregation and Functional Forms"
Recherches Economiques de Louvain, (1974), p. 1

(13) Barten A.P. - Bohm V.
"Consumer Theory"
in "Handbook of Mathematical Economics", Vol. II
edited by K.J.Arrow and M.D.Intriligator
North Holland, Amsterdam, (1982)

(14) Barten P.A. - Kloek T. - Lempers F.B.
"A note on a class of utility and production functions yielding everywhere differentiable demand functions"
"The Review of Economic Studies", Vol. 36, (1969), p. 109

(15) Barzel Y.,
"The Determination of Daily Hours and Wages"
Quarterly Economic Review,Vol. 87, (1972), p. 220

(16) Barzel Y.-McDonald R.,
"Assets, Subsistence and the Supply Curve of Labor"
American Economic Review, Vol.63, n.4, (1973)

(17) Becker G.
"A Theory of Social Interactions"
Journal of Political Economy, Vol. 82, (1975), p. 1063

(18) ---------
"A Theory of the Allocation of Time"
Economic Journal, Vol. LXXX, n. 200, (1965), p. 493

(19) Ben Porath Y.,
"Labor Force Participation Rates and the Supply of Labor"
Journal of Political Economy, Vol. 75, (1967), p. 362

(20) Bergstrom T.C.,
"Toward a Deeper Economics of Sleeping"
Journal of Political Economy, Vol.84, (1976), p.411

(21) Berndt E.R. - Savin N.E.
"Estimation and Hypothesis Testing in Singular Equation Systems with Autoregressive Disturbances"
Econometrica, Vol. 43, (1975), p. 937

(22) Blundell R. - Walker I.
"Modelling the Joint Determination of Household Labour Supplies and Commodity Demands"
Economic Journal, Vol. 92, (1982), p. 351

(23) Bollino C.A.
"Domanda di beni di consumo in Italia: una analisi econometrica"
Giornale degli economisti, Anno XL, (1981), p. 145

(24) Bonin J.-Davis W.,
"Labor Force Responsiveness to Short-Run Variations in Economic

Opportunities"
American Economic Review, (1969), Vol. 59

(25) Bourguignon L.,
"Participation, emploi et travail domestique des femmes marriees"
Consommation, (1981), p.75

(26) Bowen W.-Finnegan T.,
"The Economics of Labor Force Partecipation"
Princenton University Press, Princeton (1969)

(27) Braithwaith S.
"An Empirical Comparison of Alternative Multi-level Demand Systems for the U.S."
BLS Working Paper N. 74, (1977)

(28) Bronsard C. - Lafrance R. - Salvas Bronsard L.
"Consumption, Labour and Savings"
Cahier 8210, Universite' de Montreal, (1982)

(29) Bronsard-Salvas L.
"Estimating systems of demand equations from
French time series of cross sections data"
Annales de l'INSEE, N.30/31, (1978), p.543

(30) Brown C.-Levin E.-Ulph D.,
"Estimates of Labor Hours Supplied by Married Male Workers in Great Britain"
Scottish Journal of Political Economy, Vol. 23, (1976), p. 261

(31) Brown M.-Heien D.,
"The S-branch utility tree: A Generalization of the Linear Expenditure System"
Econometrica, Vol.40, (1972), p.737

(32) Brumi M.-Franciosi F.,
"Una interpretazione in termini di flusso della dinamica delle forze di lavoro in Italia"
Economia e Lavoro, Anno XVIII, (1981)

(33) Burnett K. - Mortensen D.T.
"Labor Supply under Uncertainty"
Research in Labor Economics, JAI Press Vol. 2, (1978), p. 109

(34) Cain G. - Watts H.
"Income, Mainanance and Labor Supply"
Chicago, Markham, (1973)

(35) Chao L.L-Ferber R.,
"Use of Time as a Determinant of Family Market Behaviour"
Journal of Business Research, Vol.5, (1977), p.75.

(36) Chiesi A.

"Il sistema degli orari, l'organizzazione del tempo di lavoro
e di non lavoro nella grande citta'"
Franco Angeli, Milano, (1981)

(37) Chiswick C.V.,
"The Value of a Housewife's Time"
The Journal of Human Resources, Vol. XVII, (1982), p. 413

(38) Clark C.,
"The Economics of Housework"
Bullettin of Oxford Institute of Statistics, Vol.20, (1958), p.205

(39) Cogan J.,
"Fixed Costs and Labor Supply"
Econometrica, Vol.49, (1981), p. 945

(40) Colin J.F.
"Temps de travail et emploi: les enjeux
d'une reduction de la duree' du travail"
Futuribles, n. 48, (1981)

(41) Colombino V.
"Squilibri strutturali sul mercato del lavoro"
in "Crisi e ristrutturazione dell'economia
italiana" a cura di A.Graziani, Torino, (1975)

(42) Contini B.
"Lo sviluppo di una economia parallela"
Edizioni di Comunita', Milano, (1979)

(43) Darrough M.N.
"A Model of Consumption and Leisure in an Intertemporal
Framework: a Systematic Treatment Using Japanese Data"
International Economic Review, Vol. 18, (1977), p. 677

(44) Deaton A.
"Demand analysis"
in Z.Griliches and M.D.Intriligator (eds)
"Handbook of Econometric"
North Holland, Amsterdam (1983)

(45) ————
"Models and Projections of Demand in Post-War Britain"
London, Chapman and Hall, (1975)

(46) ————
"Model Selection Procedures, or, Does the Consumption Function Exist?"
Mimeo, Bristol University, (1980)

(47) Deaton A.- Brown R.
"Surveys in Applied Economics: Models of Consumer Behaviour"
The Economic Journal, Vol. 82, (1972), p. 1145

(48) Deaton A. - Muellbauer J.
"Economics and Consumer Behaviour"

Cambridge University Press, (1980)

(49) Deaton A. - Muellbauer J.
"Functional Forms for Labour Supply and Commodity Demands with and without Quantity Restrictions"
Econometrica, Vol. 49, (1981), p. 1521

(50) Debreu G.
"Excess Demand Functions"
Journal of Mathematical Economy, (1974), p. 15

(51) De Cecco M.
"Una interpretazione ricardiana della dinamica delle forze di lavoro in Italia 1959-1969"
Note Economiche, (1972)

(52) De Serpa A.C.
"A Theory of the Economics of Time"
Economic Journal, Vol. 81, (1971), p. 828

(53) ————————,
"Microeconomic Theory and the Valuation of Time"
Regional and Urban Economics, Vol.2, (1973)

(54) Dickinson J.G.
"Parallel Preference Structures in Labour Supply and Commodity Demands. An Application of the Gorman Polar Form"
Econometrica, Vol. 48, (1980), p. 1711

(55) Diewert W.E.
"Intertemporal Consumer Theory and the Demand for Durables"
Econometrica, Vol. 42, n.3, (1974), p. 497

(56) Duclos D.
"Etat capitaliste et administration des emplois du temps"
La pensee', n. 199, (1979)

(57) Duggan J.E.
"Expectations and Labour Supply"
Applied Economic, Vol. 14, (1982), p. 1

(58) Evans A.W.
"On the Theory of the Valuation and Allocation of Time"
Scottish Journal of Political Economy. (1972), p. 1

(59) Farrel M.
"Some Aggregation Problems in Demand Analysis"
Review of Economic Studies, (1954), p. 193

(60) Feldman L.P.-Hornik J.,
"The Use of Time: An Integrated Conceptual Model"
Journal of Consumer Research, Vol.7, (1981), p.407.

(61) Fenlon J.,
"Recent Trends in Overtime Hours and Premium Pay"

Monthly Labor Review, (August 1971)

(62) Fleisher B.-Rhodes G.,
"Unemployment and the Labor Force Participation of Married Men and Women: A Simultaneous Model"
Review of Economics and Statistics, Vol. 58, (1977), p. 398

(63) Finnegan A.T.,
"Hours of Work in the United States: A Cross Sectional Analysis"
Journal of Political Economy, Vol.70, (1962), p.452.

(64) Foote N.N.,
"The Time Dimension and Consumer Behaviour"
in"On Knowing the Consumer" ed. J.W.Newman, John Wiley, New York, (1966), p.36

(65) Fua' G.
"Occupazione e capacita' produttiva: la realta' italiana"
Il Mulino, Bologna, (1976)

(66) Gardes F.,
"L'evolution de la consommation marchand en Europe et aux U.S.A. depuis 1960"
Consommation, n.2, (1983)

(67) Gorman W.
"Tastes, Habits and Choices"
International Economic Review, Vol. 8, (1967), p. 218

(68) Graaa W.L.,
"The Demand for the Wife's Non-market Time"
Southern Economic Journal, Vol.41, (1974), p. 124

(69) ————,
"Household Utility Maximization and the Working Wife"
American Economic Review, Vol.65, (1975), p. 90

(70) Green H.A.J
"Aggregation in Economic Analysis"
Princeton University Press, Princeton, (1961)

(71) Greenhalgh C.,
"A Labor Supply Function for Married Women in Great Britain"
Economica, Vol. 44, (1977), p. 249

(72) Gronau R.,
"Home Production-A Forgotten Industry"
Review of Economics and Statistics, Vol. 62, (1980), p.408

(73) ————
"The Measurement of Output in the Non-Market Sector - The Evaluation of Housewifes'Time" in M.Moss. ed."The Measurement of Economic and Social Performance", p.163
Columbia University Press, New York. (1973)

(74) ————,
"The Intrafamily Allocation of Time: the Value of the Housewives Time"
American Economic Review, Vol.64, n.1, (1974), p.170

(75) ————
"Leisure, Home Production and Work:
the Theory of the Allocation of Time Revisited"
Journal of Political Economy, Vol. 85, (1977), p. 1099

(76) Group Travail et Societe'
"Temps de travail et temps libre"
Futuribles, (Juillet - Aout 1984), p. 43

(77) Hanoch G.
"Hours and Weeks, in the Theory of Labour Supply"
The Rand Corporation, R-1787-HEW, Santa Monica, Ca. (1976)

(78) Hartley M.-Revankar N.,
"Labor Supply Under Uncertainty and the Rate of Unemployment"
American Economic Review, Vol.64, n.1, (1974), p.170

(79) Harves D.K,
"Time Budgets and Consumer Leisure-Time Behaviour"
in"Advances in Consumer Research",Vol.4, ed. W.D. Perrault Jr., Atlanta G.A, Association for Consumer Research, (1977), p.221

(80) Havrylyshyn O.,
"The Value of Households Services: A Survey of Empirical Estimations"
Review of Income and Wealth, Vol. 22, (1976), p. 101

(81) Heckman J.,
"Shadow Prices, Market Wages and Labor Supply"
Econometrica, Vol. 42, (1974), p. 679

(82) ————,
"A Partial Survey of Racent Research on the Labor Supply of Women"
American Economic Review, (1980), p.200

(83) Hicks J.R.
"Value and Capital"
London, Oxford University Press, (1946)

(83) Hildenbrandt W.,
"On the "law of demand""
Econometrica,Vol.51,(1983),p.1983

(84) Hollister R.G.,

"The Labor-supply Response of the Family"
Journal of Human Resources, Vol.IX, (1974), p.223

(85) **Houthakker H.,**
"The present state of consumption theory"
Econometrica, Vol.29, (1961), p.707

(86) **Houthakker H. - Taylor L.**
"Consumer Demand in the US: 1929-70"
Harvard University Press, Massachussets, (1970)

(87) **Howe H.**
"Development of the Extended Linear Expenditure System from Simple Saving Assumption"
European Economic Review, Vol. 6, (1976), p. 305

(88) **Hutchens R.M.,**
"Layoffs and Labor Supply"
International Economic Review, Vol.24, (1983), p.37

(89) **Johnston D.F.,**
"The Future of Work: Three Possible Alternatives"
Monthly Labor Review, (May 1972),

(90) **Johnson M.B.**
"Travel Time and the Price of Leisure"
Western Economic Journal, Vol. 4, (1966), p. 135

(91) **Kalachek E.-Mellow W.-Raines F.,**
"The Male Labor Supply Function Reconsidered"
Industrial and Labor Relations Review, Vol.31, n.3, (1978), p.356

(92) **Katzner D.W.**
"Static Demand Theory"
London, McMillan, (1970)

(93) **Keller W.J.,**
"Savings, Leisure, Consumption and Taxes: the Household Expenditure System"
European Economic Review, Vol.9, (1977), p.151.

(94) **Kelly J.R.,**
"Work and Leisure: A Simplified Paradigm"
Journal of Leisure Research, Vol.4, (1972), p.50.

(95) **Kiefer N.M.**
"A Bayesian Analysis of Commodity Demand and Labour Supply"
International Economic Review, Vol. 18, (1977), p. 209

(96) **Killingsworth M.R.**
"Labour Supply"
Cambridge University Press, Cambridge, (1983)

(97) **Kniesner T.,**

"An Indirect Test of Complementarity in a Family Labor Supply Model"
Econometrica, Vol.44, n.4, (1976), p.651

(98) Lancaster K.
"A New Approach to Consumer Theory"
Journal of Political Economy, Vol. 74, (1966), p. 132

(99) Layard R.-Barton M.-Zabalza A.,
"Married Women's Participation and Hours"
Economica, Vol. 47, (1980), p. 51

(100) Lemennecier B.- Levy-Garboua L.,
"L'arbitrage autarcie-marche': une explication du travail feminin"
Consommation, n.2, (1981)

(101) Letourner O.
"Vecu d'une reduction du temps de travail"
Futuribles, n. 48, (1981)

(102) Levy-Garboua L.
"Les modes de consommation de quelques pays occidentaux"
Consommation, n.1, (1983),p.3

(103) Lewis H.G.
"Economics of Time Labour Supply"
American Economic Review, Vol.65, (1975), p.29.

(104) L'Hardy Ph. - Trognon A.,
"La structure de la consommation des menages: evolution depuis vingt ans et perspectives"
Futuribles, (Avril 1980)

(105) Lluch C.
"The Extended Linear Expenditure System"
European Economic Review, Vol. 4, (1973), p. 21

(106) ————
"Consumer Demand Functions: Spain"
European Economic Review, Vol. 2, (1971), p. 277

(107) Long J.-Jones E.,
"Labor Force and Exit by Married Women a Longitudinal Analysis"
Review of Economics and Statistics, Vol. 62, (1980), p.1

(108) Lovane A. - Pala G.
"Lavoro salariato e tempo libero, un'analisi dell'economia del tempo"
Franco Angeli, Milano, (1981)

(109) Lucas R.-Rapping L.,
"Real Wages, Employment and Inflation"
Journal of Political Economy, Vol. 77, (1969), p. 721

(110) Macrae - Yerzel,
"The Personal Income Tax and Family Labor Supply"

Southern Economic Journal, n.1, (1976)

(111) Maret E. - Finlay B.
"The Distribution of Household Labor Among Women in Dual-Earner Families"
Journal of Marriage and the Family, Vol. 46, (1984), p. 357

(112) Mason R.S.
"The Economic Theory of Cospicuous Consumption"
International Journal of Social Economics, Vol.10,(1983),p.3

(113) McFadden D. & al.
"A Characterization of Community Excess Demand Functions"
Journal of Economic Theory, Vol. 9, (1974), p. 361

(114) Mincer J.,
"Labor Force Partecipation of Married Women: a Study of Labor Supply"
in Aspects of Labor Economics, Princeton, (1962)

(115) ---------,
"Labor Force Participation of Married Women"
in "Aspects of Labor Economics", University - National Bureau Commitee for Economic Research, Vol.14, (1962)

(116) Moore G.H. - Hedges J.N.
"Trends in Labor and Leisure"
Monthly Labor Review, (February 1971)

(117) Moses L.N.
"Income, Leisure and Wage Pressure"
Economic Journal, Vol.72, (1962), p. 320

(118) Muellbauer J.
"Household Production Theory, Quantity and the Hedonic Technique"
American Economic Review, Vol. 64, (1974), p. 977

(119) ----------
"Aggregation, Income Distribution and Consumer Demand"
Review of Economic Studies, Vol. 42, (1975), p. 524

(120) ----------
"Linear Aggregation in Neoclassical Labour Supply"
Review of Economic Studies, Vol. 48, (1981), p.21

(121) Murphy M.
"The Value of Non-Market Household Production:
Opportunity Cost Versus Market Cost Estimates"
Review of Income and Wealth, Vol. 24, (1978), p. 243

(122) Muth R.F.
"Household Production and Consumer Demand Functions"
Econometrica, Vol. 34, (1966), p. 699

(123) Nakamura M. - Nakamura A. - Cullen D.

"Job Opportunities, the Offered Wage and the Labor Supply of Married Women"
RAmerican Economic Review, Vol. 69, n. 5, (1979), p. 785

(124) Naville P.
"Temps, travail et loisirs"
Sociologie du travail, n. 4, (1980), p. 431

(125) Neary J.P. - Roberts K.W.S.
"The Theory of Household Behaviour under Rationing"
European Economic Review, Vol. 13 (1980), p. 25

(126) Nickols S.Y.,
"Buying Time and Saving Time:Strategies for Managing Household Production"
Journal of Consumer Research, Vol.10, (1983),p.177

(127) Niemi B.
"Female Labor Supply in the Context of Inflaction"
American Economic Review, Vol. 71, n. 2, (1981), p. 70

(128) Nock L.S. - Kingston P.W.
"The Family Work Day"
Journal of Marriage and the Family, Vol. 46, (1984), p. 333

(129) Ocde
"Labour Supply, Growth Constraints and Work Sharing"
Paris (1982)

(130) ————
"Youth Undemployment"
Paris (1980)

(131) ————
"Towards Full Employment and Price Stability"
Paris (1977)

(132) O'Neill
"A Time Series Analysis of Women's Labor Force Participation"
American Economic Review (1981)

(133) Owen J.D.
"The Demand for Leisure"
Journal of Political Economy, Vol. 79, (1971), p.56

(134) ————
"Workweeks and Leisure: An Analysis of Trends, 1948-1975"
Monthly Labour Review, Vol. 99, (1976), p. 3

(135) Padoa Schioppa F.
"La forza lavoro femminile"
Il Mulino, Bologna (1977).

(136) Parker S.R.
"Theory and Practice of the Work - Leisure Relationship"

Society and Culture, Vol. 2, (1969), p. 29

(137) Parks R.W.
"Maximum Likelihood Estimation of the Linear Espenditure System"
JASA, Vol. 66, (1971), p. 900

(138) ---------
"System of Demand Equations: An Empirical Comparison of Alternative Functional Forms"
Econometrica, Vol. 37, (1969), p. 629

(139) Parsons D.
"The Decline in Male Labor Force Participation"
Journal of Political Economy, Vol. 88, (1980), p. 117

(140) Phlips L.
"Applied Consumption Analysis"
North Holland, (1974)

(141) ---------
"The Demand for Leisure and Money"
Econometrica, Vol. 46, n. 5, (1978), p. 1025

(142) Phlips L. - F.Spinnewyn
"Rationality versus Myopia in Dynamic Demand Systems"
Advances in Econometrica, Vol. 1, JAI Press Inc. (1982)

(143) Pieraerts P. - Phlips L.
Loisir et salaires reel en Belgique"
Recherches Economiques de Louvain, Vol. 44, (1978)

(144) Pollack R.
"Habit Formation and Dynamic Demand Function"
Journal of Political Economy, Vol. 80, (1972), p. 745

(145) ----------
"Habit Formation and Long-Run Utility Functions"
Journal of Economic Theory, Vol. 11, (1976), p. 272

(146) ----------,
"Conditional Demand Functions and Consumption Theory"
Quarterly Journal of Economics, Vol. ,(1969),p.60

(147) ----------
"Conditional Demand Functions and the Implications of Separable Utility"
Southern Economic Journal, Vol.37, (1971), p.423

(148) ----------
"Additive Utility Functions and Linear Engel Curves"
Review of Economic Studies, Vol.38, (1971),p.401

(149) ----------
"Generalized Separability"
Econometrica, Vol.40, (1972), p.431

(150) Pollack R. - Wales T.
"Estimation of the Linear Expenditure System"
Econometrica, Vol. 37, (1969), p. 661

(151) Pollack R. - Watcher M.
"The Relevance of the Household Production Function and Its Implications for the Allocation of Time"
Journal of Political Economy, Vol. 83, (1974), p. 255

(152) Powell A.
"Aitken Estimators as a Tool in Allocating Predetermined Aggregates"
JASA, Vol. 64, (Settember 1969), p. 913

(153) ---------
"Empirical Analysis of Demand Systems"
Lexington Books London, (1974)

(154) ---------
"The theory of labour supply and commodity demand with an endogenous marginal wage rate"
Recherches Economiques de Louvain, Vol. 45, (1979), p. 215

(155) Prais S.J. - Houthakker H.S.
"Analysis of Family Budgets"
Cambridge University Press, Cambridge, (1971)

(156) Rayner S.C.
"On the Identification of the Supply Curve of Working Hours"
Oxford Economic Papers, Vol. 21, (1969), p. 293

(157) Rea S.A.
"Unemployment and the Supply of Labour"
Journal of Human Resources, Vol. IX, (1974), p. 279

(158) ----------
"An Overview of the Labour - Supply Results"
Journal of Human Resources, Vol. IX, (1974), p. 158

(159) Rossi N.
"A Dynamic Demand System"
LUISS, Roma, (1982), mimeo

(160) Roustang G.
"Le travail autrement (travail et mode de vie)"
Dunod, Paris, (1982)

(161) Roy G.
"La journee des citadins"
Futuribles, (Fevrier 1984), p. 36

(162) Rybezynsky T.M.
"Factor Endowment and Relative Commodity Prices"
Economica, Vol. 22, (1955)

(176) Strand R. - Denburg T.
"Cyclical Variations in Civilian Labor Force Participation"
Review of Economics and Statistics (1969)

(177) Strober M.
"Wives' Labor Force Behavior and Family Consumption Patterns"
American Economic Review Vol.67, n.1, (1977)

(178) Strotz R.
"The Empirical Implication of the Utility Tree"
Econometrica, Vol. 27, (1959), p. 269

(179) ---------
"The Utility Tree: a correction and further appraisal"
Econometrica, Vol.27, (1959),p.482

(180) Sue R.
"Vers une societe' du temps libre: chomage ou temp libre?"
PUF, Paris, 1982

(181) Sweet J.A.
"The Employment of Wives and the Inequality of Family Income"
Proceedings of the American Statistical Association.
Social Statistics Section, (1971), p. 1

(182) Theil H.
"Theory and Measurement of Consumers Demand"
Vol. I and II, North Holland, Amsterdam, (1975)

(183) Tirelli D.,
"La relazione tra consumo e orari di lavoro in tre paesi europei"
in "Inflazione e salari" a cura di E.Addis,
Marsilio, Padova, (1984)

(184) ----------,
"Osservazioni sui modelli allocativi del consumo e del tempo di lavoro"
Economia & lavoro, Anno XVIII, n.1, (1984), p.53

(185) Tirelli D. -Liso G.,
"Previsioni dei consumi privati delle famiglie italiane"
Supplemento al "Rapporto di Previsione", PROMETEIA, Bologna, (1984)

(186) Tirelli D.- Rossini G.,
"Gli orari di lavoro nell' ottica neoclassica"
Politica ed economia, (Maggio 1983), p.79

(187) Toikka R. - Holt C.
"Labor Force Participation and Earnings in
a Demographic Model of the Labor Market"
American Economic Review Vol. 66, n.2, (1976)

(188) Trognon A.
"Composition des menages et systeme lineaire
de depenses"

Annales de l'INSEE, N.41, (1981), p.3

(189) Tulpule' A.
"Revised Estimates of Labour Supply Elasticities"
IMPACT Project, Working Paper n. B.12, Melbourne, (1980)

(190) ----------
"Effects on the Supply of Labour Hours by Employees of Changes in Their Conditions of Employ"
IMPACT Project, Working Paper n. BP.25, Melbourne, (1980)

(191) Unger L.S. - Kernan J.B.
"On the Meaning of Leisure: An Investigation of Some Determinants of the Subjective Experience"
Journal of Consumer Research, Vol. 9, (1983), p. 381

(192) Vickery C. - Brgmann B. - Swartz K.
"Unemployment Rate Targets and Antinflation Policy as More Women Enter the Work Force"
American Economic Review (1980)

(193) Vinci S
"I consumi privati in Italia 1953-64: un'analisi econometrica"
Giornale degli economisti, Vol. 26, (1967), p. 361

(194) Von Weizsacker C.C.,
"Notes on endogenous change of tastes"
Journal of Economic Theory, Vol.3, (1971), p.345

(195) Wales T.J. - Woodland A.D.
"Estimation of the Allocation of Time for Work, Leisure and Housework"
Econometrica, Vol. 45, (1977), p. 117

(196) Weiserbs K.
"A Note on the Discrete Specification of the State-Adjustment Model"
Working Paper n. 7514, Institut des Sciences Economiques Louvain, (1975)

(197) --------
"More About Dynamic Demand System"
Recherches Economiques de Louvain, Vol. 40, (1974), p. 33

(198) Winston G.C.
"An International Comparison of Income and Hours of Work"
Review of Economics and Statisticals, Vol. 68, (1966), p. 28

(199) Woodland A.D. - Wales T.J.
"Labour Supply and Progressive Taxes"
Review of Economic Studies, Vol. 46, (1979), p. 142

(200) Yoshikara K.
"Demand Functions: An Application to the Japanese Expenditure Patterns"
Econometrica, Vol. 37, (1969), p. 257