

EUROPEAN UNIVERSITY INSTITUTE, FLORENCE

Department of Economics

320



E U I W O R K I N G P A P E R N o . 6 0

ADJUSTING TO COMPETITIVE DEPRESSION:

THE CASE OF THE REDUCTION IN WORKING TIME

by

Jean-Paul Fitoussi

and

Daniel Szpiro

The authors would like to thank Domenico Mario Nuti and Giancarlo Rossi for their critical reading of a preliminary version of this article.

This paper is a slightly modified version of a paper which appeared in French under the title: "Politique de l'emploi et réduction de la durée du travail", Observations et Diagnostics Economiques, juin 1983, N. 4.

BADIA FIESOLANA, SAN DOMENICO DI FIESOLE

All rights reserved.
No part of this paper may be
reproduced in any form without
permission of the authors.

(C) Jean-Paul Fitoussi
and
Daniel Szpiro

Printed in Italy in November 1983
European University Institute
Badia Fiesolana
50016 San Domenico (Fi)
Italy

Summary

That the reduction in the length of the working week seems to be the preferred means of combatting unemployment is symptomatic of an evolution which has led European governments to an acceptance of a permanently lower level of economic activity, and to formulate policies most aptly described at an international level as "competition by deflation". The logic of work sharing is the adaptation of the supply of labour to the existing amount of employment. It is therefore a redistribution of a given amount of unemployment.

If it is to be a genuine social advance, the reduction in the working week should be accompanied by a change in the distribution of income between all social groups. But when seen as an employment policy, it clearly implies only a redistribution of the existing wage bill between the employed and unemployed.

In this article, we investigate the conditions necessary for the success of such a policy and its probable effects on employment. The results of the simulations of econometric models which have been performed for a number of European countries--similar for the most part--are then analysed. But despite these efforts of quantification, a great uncertainty remains as to the effects of such a policy on both production processes and the behaviour of agents. Moreover a further theoretical and empirical analysis of these effects leads us to doubt that the reduction in the length of the working week provides any answer to the problems of unemployment.

ADJUSTING TO COMPETITIVE DEPRESSION:
THE CASE OF THE REDUCTION IN WORKING TIME

Jean-Paul Fitoussi, Professor at the European University
Institute

and

Daniel Szpiro, Director of Studies at the "Observatoire
Français des Conjonctures Economiques"

Worsening unemployment in an inflationary context has weakened the credibility of growth as a policy for solving the employment problem. The non-cooperative character of international relations, which exacerbates the external "constraint", leads governments, whatever be their initial intentions, to adopt, more or less explicitly, restrictive policies. To increase unemployment becomes a substitute for protectionism, an instrument serving a higher-order objective: balancing external trade and defending the exchange rate.

On the global level, however, the crisis is of a Keynesian nature: the restrictive policies pursued in most Western countries have been combined notably with the fact that in the newly industrialized countries purchasing power corresponding to the recently installed production capacity has not been created. On the level of a developed country, it can be analysed in terms of insufficient competitiveness (excessive wage costs) and/or of structural maladaptation of the productive apparatus. The fact that most developed countries are arguing along the same lines should have

drawn attention to the inadequacy of that argument or at least encouraged more cooperative economic policies. The present strategy leads to a "low pressure" equilibrium in the world economy, which implies that any attempt at recovery in a single country is condemned to failure. The existence of a reserve of unemployment seems inescapable. According to a recent memorandum from the Commission of the European Communities, stabilizing the rate of unemployment at around 11% of the working population (12 million unemployed) would need a growth rate above 3%. This seems impossible in the short term and unlikely in the medium term.

In such a context, with investment possibilities reduced by low growth prospect, the problem of employment becomes that of a voluntary or constrained reduction in the supply of labour. An arithmetical illusion makes it look as if 8 men working 6 hours should give the same productive contribution as 6 men working 8 hours. Hence the idea of substituting one type of rationing for another. On the labour market, the existence of unemployment implies that the economic system spontaneously chooses one particular rationing scheme: those offering their labour are either totally satisfied or totally excluded from productive activity. Economic theory is practically silent on the reasons for this choice. Its rationality can be founded only on arguments which are generally exogenous to the models used. In the present state of economic theory, any type of rationing whatever might be possible, in particular a proportional reduction in working hours. There would then be no totally unemployed people, but all individuals would be partly unemployed if the supply of labour was in ex-

cess. It would therefore be possible to fix working hours in such a way that the whole available active population would be employed, i.e. in such a way that the disequilibrium of the labour market would be shared among all instead of borne by a few. Unemployment would then have an entirely different nature; it would no longer be an attribute of the individual, but a characteristic of the system as a whole.¹⁾

This solution implies the meeting of at least three conditions:

- that work is homogeneous and men interchangeable, otherwise working hours should be differentiated according to the respective availability of different categories of workers;

- that production processes actually allow a "substitution" between labour services and labour force;

- that the wage fund is redistributed between the unemployed and those at work, i.e. that sharing out work is not simply a means of increasing the leisure of the active employed population. If the generous idea of sharing work serves as a pretext for redistributing the national income between the actively employed and employers, with the unemployed left out entirely, that had better be said. But then one should not in the same context deplore the lack of competitiveness as the result of a growth in wage costs.

These conditions, particularly the last one, are imposed by the very premises of the reasoning. Long-term growth prospects are limited, and labour hence becomes a relatively abundant factor. "At the great feast of nature there would not be

enough places." The Malthusian illusion of the excessive numbers of men raises its head again. But there are no lessons from history here, or at least they are ambiguous. The reduction in working time has characterized economic and social evolution since the industrial revolution. (Let us remember the times of Engels, where children's working hours had to be regulated to stop them exceeding 12 hours a day.) If this sharing out of work was possible yesterday, why should it not be tomorrow?

Since 1965, the trend to a progressive reduction in hours worked has been general in all countries. A reduction in the legal working hours would, in this reasoning, only anticipate the trend and hasten the necessary adjustments in favour of employment.

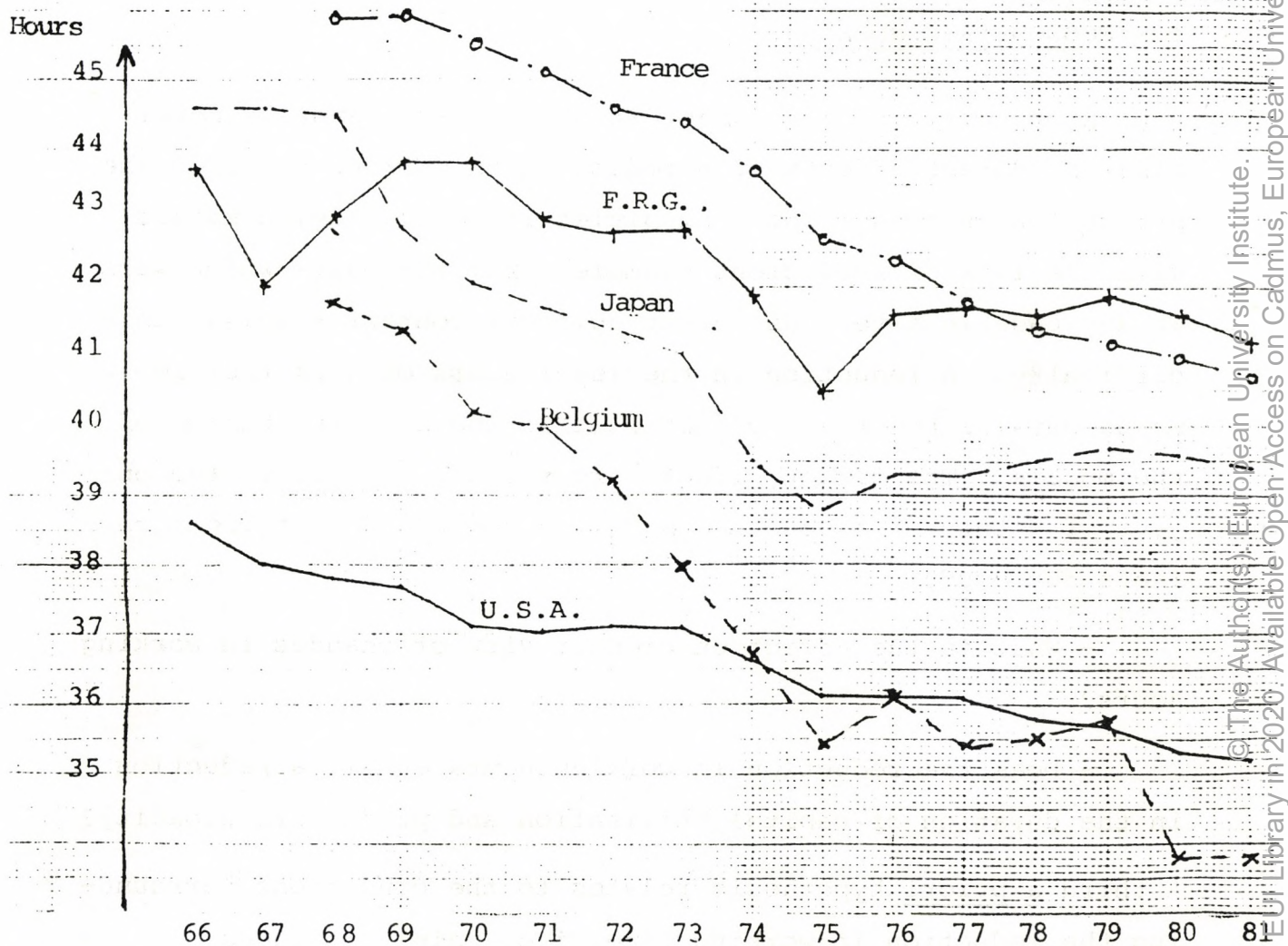
But it is one thing to take note of spontaneous developments that take place against a background of economic and social progress. It is another to seek to constrain these developments and to justify this constraint by the absence of prospects for progress.²⁾ The reduction of working hours is in itself an end of our economic system, but it is doubtful that it constitutes a means towards a better distribution of scarcity in a crisis period. The conditions set out above are, of course, very unlikely to be met. The study of the consequences of the reduction of working time does not therefore proceed by simple arithmetic, but calls for a consideration of the whole set of interdependencies that characterize the functioning of the economic system. In practice, this means that econometric models should be used for a simulation of the effects of the

FIGURE I

Evolution of weekly working hours

(Source: I.L.O. Labour Force Statistics)

Total non-farm sectors



reduction in working time. Such an exercise, however, proves difficult and doubtful, for two fundamental reasons. The first is that the modelling of the production processes and their time dimension is still a largely unexplored area of economic analysis. The second comes from the fact that a re-

duction in working time represents a structural change--social processes are in general not reversible--and one does not know how it will affect the behavioural relations in the model. The reliability of the simulation results is therefore less the greater the proposed reduction in working hours.

I - ECONOMETRIC MODELS

Econometric models cannot in general endogenously determine the direct effects of a reduction in working hours on the production process. The ambiguities in theorizing, combined with the lack of sufficient examples from the past--which were in any case in a very different economic context--explain this difficulty. A reduction in the legal hours of work thus remains outside the field of observation and experimentation of the models. The direct effects are therefore a priori the object of alternative hypotheses, which constitute different variants for study:

- What is the effect on productivity of changes in working hours?

- Does the reduction in working hours entail a reduction in the duration of capital utilisation and productive capacity?

A third a priori hypothesis relates to the conditions surrounding the reduction in working time, i.e. mainly to wages:

- Is the reduction in working time accompanied by a sharing of income--i.e. a reduction in monthly income with unchanged hourly wages--or does it instead lead to an increase in wage costs? It is of course understood that wage income cannot

undergo any reduction if the decrease in working hours is a substitute for an already planned or foreseeable wage increase, i.e. if it leads the workers to renounce other claims.

On the basis of a priori hypotheses concerning these effects and conditions, many simulations have been carried out in most European Community countries. Apart from the quantitative differences in result--the models used have different specifications, even if they derive from the same theoretical line--they allow a number of significant conclusions to be drawn.

1) Employment always increases less than proportionately to the reduction in working hours. In other words, the total number of hours worked in the economy diminishes, whatever be the hypothesis considered. In all simulations done for France using the DMS model, the one corresponding to a maximum effect on employment provides for a percentage increase in employment less than half that in the reduction in hours worked. The gain in employment corresponding to a progressive shortening of the working week from 40 to 35 hours would on the most favourable conditions be 880,000 instead of some two million at the end of five years.³⁾

2) When account is taken of all the likely effects brought about by a reduction in working hours--including corrective policies applied to reduce the external disequilibrium--the models have brought out that the effect on employment is more favourable the closer one comes to the

conditions set out in the introduction: maintenance of hours of utilization of capital, i.e. of productive capacity; and reduction in monthly wage income proportionate to the reduction in working hours. The models generally assume no long-term productivity gains. If however, despite these favourable conditions, employment does not rise in proportion to the reduction in working hours, the reason lies chiefly in two linked effects:

- The compensatory recruitment is not immediate, which, combined with the assumption of maintenance of capacity, implies a transitory increase in productivity, known under the name of productivity cycle.⁴⁾

- It follows that the wage fund, demand and production costs undergo a relative reduction, as does the growth rate of the gross domestic product. The share-out of work and income does not therefore take place identically, since production shows a slight decline (varying according to model, but always present).

- On these hypotheses, shortening working hours becomes a powerful means of reducing both the disequilibrium in welfare budgets (particularly the social security deficit) and the external deficit.

3) The models differ more in quantitative evaluation when the hypothesis of wage compensation is considered. This implies, immediately following the cut in working hours, an increase in hourly wage rates, and with productive capacity unchanged, an increase in wage costs which is higher the less is

the transitory growth in productivity. The increase in wage costs is in fact exactly equal to the costs per unit produced of the extra recruitment carried out by the firms. The wage compensation thus brings about two contradictory effects, which explain the divergences among the models. On the one hand, the increase in the wage fund leads to an increase in effective demand. On the other, the growth in wage costs damages the competitiveness of firms if it leads to inflation, and reduces their profitability if it does not. Depending on whether the models favour the first or the second of these effects, they will deduce overeffectiveness of the measure for employment (as in the METRIC model) or an attenuation in its positive effects (as in DMS). The following table gives a picture of the divergences between models from different countries.

Independently of these divergencies, which relate to the different specifications of certain relationships, particularly the investment function, the simulations generally do not take account of feedback effects of the evolution of the economy on economic policy.⁵⁾

The hypothesis of wage compensation can be analysed in relation to the first column of the table, as a measure of "recovery" of economic activity through consumption. Its success or failure (always in relation to the opposite hypothesis) will depend on whether the external equilibrium has constraining force or not, i.e. whether a worsening in the trade deficit will bring about a corrective policy or not. If that were the case, this policy would cancel the positive

Table I

Effects on employment of a reduction in working hours, on various hypotheses of wage compensation

<u>Hypothesis</u>	No wage compensation	Wage compensation
Country		
<u>FRANCE</u>		
Metric	+	++
DMS	+	+-
Propage	+	++
<u>GERMANY</u>		
Institute for planning and decision-making systems	+	++
Universities of Tübingen and Freiburg	-	--
<u>BELGIUM</u>		
Planning Office	+	+-
<u>DENMARK</u>		
Finance Ministry (ADAM)	+	+-
Economic Council	+	-
<u>NETHEPLANDS</u>		
Economic and Social Council (Vintaf II)	+	-
University of Amsterdam	+	+
<u>UNITED KINGDOM</u>		
Treasury Model	+	+-
<u>EUROPEAN COMMUNITY</u>		
COMET III	+	+

A plus (+) in the first column indicates a positive effect on employment; a minus (-) a negative effect. A ++ in the second column means an accentuation of the positive effect; a +- a reduction in this effect with the overall effect remaining favourable. Where only one sign appears in the second column, it indicates either that the overall effect of the reduction in working hours is negative on the assumption of wage compensation (sign -); or that this effect remains positive but is more or less the same whether there is wage compensation or not.

effects expected from the measure, since it would use as an instrument the reduction of effective demand. The fact that the "external constraint" bears differently on the countries considered probably explains the divergencies in their conclusions. One need not therefore be astonished that wage compensation has a positive effect in the Federal Republic of Germany.

When on the other hand the external balance has constraining force, i.e. when the government's financial and monetary policy is endogenized, a "trade-off" would exist between the change in real wages and employment.⁶⁾ This trade-off implies that any increase in real wages takes place to the detriment of employment.

4) Since it is an object of negotiation, the question of wage compensation can theoretically be dealt with. That of the effect of reduction of working hours on the duration of utilization of capital is of quite a different nature, and implies a knowledge of the determinants of production which is still only fragmentary.

The reduction in the duration of utilization of capital has clearly negative effects on employment in practically all simulations. The numbers of men employed always grow less than on the assumption that productive capacity is unaffected, and even sometimes fall by comparison with the reference situation where legal working hours are not changed. If in fact production fell, firms' employment needs would not be changed by the reduction in working

hours, but unit capital costs would increase whether or not there were wage compensation. The effects on the balance of trade would obviously be negative, because of both a reduction in exports and an increase in imports.

By way of illustration, the following table describes what would, according to DMS,⁷⁾ be the effects of a reduction in working hours combined with a reduction in the duration of capital utilisation in the sector exposed to foreign competition. The hypothesis considered is that of a reduction from 40 to 35 hours per week, in steps of one hour per year.

The decrease in the duration of capital utilisation seems to cancel out almost entirely the positive effects on employment of a shortening in working hours, even on the assumption of no wage compensation.

We have deliberately confined this brief overview of the findings of simulations done using econometric models to their qualitative aspects rather than the quantitative ones. On the one hand, in fact, the extent of reduction in working hours contemplated in the various countries is not the same. On the other, the models used differ in their specifications, so that the reference situation--the forecast to which the consequences of the economic policy measure are compared--is not necessarily identical from one simulation to another. A quantitative comparison would imply a prior distinction of what in the differences in evaluation of the consequences of shortening working hours is due to a differing representation of economic relations.

Effects of a shortening of working hours with reduction in the duration of utilization of capital (exposed sector)
(average annual changes over 5 years)

Economic indicator	Unit	Reduction of 1 hour per year in working hours	Reduction of 9/10 hours per year in hours of use of equipment	Combined effect
-GDP in real terms	Average % per	-0,08	-0,75	-0,83
-Household consumption	year for the	-0,36	-0,27	-0,63
-Gross investment (firms)	period 1981-1985	+0,24	-0,78	-0,54
-Capacity (+) or need (-) for financing				
-of administrations	million F	+ 9 793	- 12 155	-2 362
-of the Nation	(1980) per year	+ 6 714	- 2 282	+4 432
-Growth in consumer prices	average % per year	-0,24	+0,56	+0,32
-Growth in purchasing power				
-annual net gain for wage workers	average % per year	-0,75	-0,16	-0,91
-disposable household income		-0,40	-0,27	-0,67
-Change in total employment	thousands, per year	+74,3	- 70	+4,3

Source: preparatory work on VIIIth Plan, 'Rapport du Comité Emploi-Revenus, La Documentation française, p. 157, 1980.

It would however seem that the findings of simulations as to the direction of the effects on employment of a reduction in working hours are comparable. Everything depends on three parameters: the proportion in which the reduction in working hours leads to lasting gains in productivity; the proportion in which it leads to a fall in productive capacity; the proportion in which its cost is supported by firms. If these three proportions are zero, the effect on employment is maximum. The models generally assume that the first is zero, with the productivity gains envisaged being only transitory. A consideration of positive values for the second and/or third proportion generally leads to an attenuation of the positive effects on employment. The least favourable configuration is obtained when both are equal to 1. But it is precisely the fact that these parameters are unknown that constitutes the problem. Attempts at quantification have therefore not reduced our uncertainty as to the consequences of a policy of shortening working hours.

II - WORKING HOURS, DURATION OF THE PRODUCTION PROCESS AND PRODUCTION CAPACITY

The hypothesis of maintenance of productive capacity used in the simulations in fact assumes that the problem is solved, since it implies a substitution between hours worked and men employed. It therefore has the immediate consequence of a growth in the demand for labour in terms of men.⁸⁾ In other words, the shortening of working hours is credited from the outset with a favourable effect. Although there is no lack of

ingenious arguments to justify the assumption, there is equally none of ones to contradict it. But their generally ad hoc character damages the credibility of the argument. This is why it is useful to turn towards theoretical considerations.

When one considers a general representation of production processes the idea of substitution between working hours and men at work, i.e. between labour services and labour force appears superficial. Such a representation implies a distinction between the "agents" of the productive processes (capital, number of workers) and their services (working hours, duration of capital utilization). Production per unit of time is then a function of the "agents"--so many machines combined with so many men produce so and so much product per hour--and total production in a given period is proportional to the duration of the production process. This cannot be confused with working hours unless there is only one shift. This theoretical outline allows some interesting conclusions to be drawn, which we shall only mention in the context of this article:⁹⁾

- A reduction in working hours does not lead to the formation of an extra shift to keep up the production level unless it reaches a certain proportion defined by very strict conditions. If these conditions are met, the duration of capital utilization increases, with unchanged production. The transition to an extra shift is accompanied by a reduction in the number of men per shift, but total employment increases in a proportion equal on a first approximation to that of the reduction in working hours.

- If the reduction in hours does not have the extent necessary for this critical proportion, production falls. In any case at unchanged wage rates, optimal employment is independent of working hours.¹⁰⁾ In order for productive capacity to be maintained, the fall in the duration of capital utilization would have to be compensated for by an increase in employment. But this is only possible if the wage rate goes down. Income per worker would then undergo a reduction more than proportionate to that in working hours. The increase in the number of men employed when the duration of capital utilization is reduced implies in effect a decrease in labour productivity.¹¹⁾

One must of course step back somewhat from these theoretical results, especially because they proceed from statics and assume that capital is constant. But they allow a better understanding of the productive process because they take account of the relations between production time, working hours and capacity. They lead one to think that the most probable result of a policy of a progressive but slight reduction in working hours would be a fall in production capacity.

However, even if the reduction in working hours is below the critical proportion, this fall need not be proportional to that in working hours except in extreme circumstances which imply the meeting of at least three conditions:¹²⁾

- There is no excess capacity ("the margins of production capacity with recruitment" are at their optimum level);
- The reduction in working hours brings about no increase in productivity;

- No investment is made to compensate for the fall in productive capacity.¹²⁾

If one of these conditions is not met, the fall in productive capacity would be below that in working hours to an extent that depends precisely on the available margins of capacity, the gains in productivity or the investments. For instance, in the simulation done by the Danish Finance Ministry, the question of loss of capacity does not play an important part, since on the hypothesis that it takes place, it encourages sufficient investment to compensate for its negative effect on employment. This case is obviously extreme, but it draws attention to a causality that the models generally ignore, between reduction in working hours and investment.¹³⁾

The proportion in which a relatively slight reduction in working hours ought to bring about a reduction in productive capacity should therefore be positive, though less than 1. Jacques Drèze has estimated, for the Belgian economy, that on the assumption that the cost of the cut in working hours is 2/3 supported by the workers, this proportion ought to be less than 1/4 in order for the effects on employment of the proposed policy to be favourable.¹⁴⁾

III - WORKING HOURS AND PRODUCTIVITY

The question of the "dilemma" of productivity has been widely discussed in all the works dealing with the effects of shortening working hours. There is a dilemma because the maintenance of productive capacity calls for an increase in labour productivity, but if this does take place the effects

on employment are thereby attenuated. We have seen that the adjustment of actual to desired employment generates a productivity cycle, but that the resulting growth in productivity is in an inverse relation to the speed of the adjustment. In other words, if the firm proceeds instantly to compensatory recruitment, labour productivity would not change. In any case, this process is only transitory, and does not affect labour productivity in the long term. In most models, labour productivity is therefore not affected by a reduction in working hours.

However, there is a convergent series of studies concluding instead that there are lasting effects on productivity of a reduction in working hours,¹⁵⁾ and a survey done in 1978 by the journal L'usine nouvelle indicates that firms would initially if not primarily react to such a measure by trying in all ways to increase productivity. Other surveys have confirmed this finding.¹⁶⁾

It is our intention here, without prejudging the direction of the causal links between changes in working hours and changes in productivity, to bring some theoretical considerations to bear on the relation between these two variables and to present the results of an empirical exploratory study.

Recent developments in the economic theory of labour conflicts have shown that there is a trade-off between the union claims regarding working conditions, primarily working hours, and those regarding wages. Increases in productivity allow both these claims to be partially satisfied.

In the neoclassical approach to the supply of labour, the expected growth in productivity and therefore in real wages brings about an intertemporal effect of substitution between work and leisure which may be reflected in a reduction in the individual supply of labour.

More specifically, since the end of the fifties, the increase in hourly productivity of labour has in fact been accompanied by a fall in the annual working hours, compensated by a smaller growth in the purchasing power of the average wages. In this evolution, the increase in productivity therefore seems to be a factor determining the reduction of working hours.

The Marxist concepts of surplus value--Marx was one of the rare authors to deal with the problem of working hours--allow emphasis to be made on the existence of a trade-off between working hours and productivity, but this time from the point of view of firms.

The reduction in absolute surplus value (which depends on the length of the working day) leads firms to seek ways to increase relative surplus value, which varies in direct proportion to productivity. This means is of course the accumulation of capital, i.e. the investment. It is therefore the prospect of productivity growth that leads workers to demand and firms to accept a reduction in working hours.

Expectations of lasting productivity gains therefore seem to govern the spontaneous evolution of working hours.¹⁷⁾

We have attempted a rough empirical test of this relationship. Medium-term expectations of productivity developments are not observational data, and we have formulated a hypothesis regarding their formation.

Productivity has a "technological" component depending on the productive combination of the factors (equipment, labour skills) and the organization of production. We assume that the firm is prudent in forecasting future technology, because of a twofold uncertainty: firstly regarding technical progress, and secondly regarding its own financial situation, which may slow down implementation of productivity investments. Firms will expect productivity gains to continue on the basis of existing technical standards.

The second component of the expectations is of an economic nature. For a given technology, lags in adjusting the production factors to their desired level determine short-term fluctuations in productivity. It is our hypothesis that firms form their expectations of productivity on the basis of a normal rate of utilization of productive capacity. It is therefore potential productivity rather than actual productivity that constitutes our reference.

The relationship between working hours and expected productivity has been compared with statistical data from three countries (France, Italy, United Kingdom). The econometric results and the method of estimation used are described in the annex. The partial nature of the relationship and the uncertainties related to the international statistical comparisons prevent us

from proceeding to draw quantitative conclusions on the bases of these results.¹⁸⁾ But our aim was not to make quantitative forecasts on the basis of these relationships, but to look for a confirmation of a hypothesis, mainly that there is a structural relation between working hours and productivity in the medium term; and such relation does seem to exist in the three countries.

Whatever be the causal links between these two variables, and our hypothesis favours that going from economic growth to working hours, a reduction in legal working hours will probably lead to lasting productivity gains. But this conclusion is not so negative as it seems regarding the effects of such a measure on employment. One cannot in fact lose on both grounds; an increase in productivity ought to partly compensate for the negative effects of the reduction in working hours on productive capacity.

In any case, neither one of these effects is independent of the evolution in labour cost since the latter in part determines both the developments in productivity, through its influence on investment, and that of profitable capacity, at least in the short term.

IV - THE QUESTION OF WAGE COMPENSATION

The question of the increase in wage rates is clearly not independent of the diagnosis one makes on the present economic recession. If there exist excess capacities, if the problem is that of the failure of effective demand, then a shortening

in working hours will have the more effect on employment if it is accompanied by an increase in wage rate, i.e. by total wage compensation.

If instead the diagnosis is that of a shortage of capacity, of a lack of profitability, then wage compensation will lead at best to inflation and devaluation, at worst to a worsening of unemployment.

But a policy of shortening working hours is better founded on the second diagnosis, since it assumes that employment (in terms of hours worked) has reached a level that is hard to exceed, and that therefore unemployment must be shared differently among workers. As we have stressed, this policy amounts to substituting one rationing scheme by another; to acting on the effects rather than on the causes. If this diagnosis is well founded, other policies are possible and perhaps preferable,¹⁹⁾ since organizing the rationing of labour may have a number of consequences that must be made explicit.

The reduction in working hours and proportionately of income is unacceptable to the worker unless the marginal "disutility" of labour compensates exactly for the utility of the fraction of income that he is giving up. Were this not the case, were the first less than the second, the worker would seek means of loosening the constraints facing him. The risk of seeing a dual labour market emerging is therefore associated with such a policy. But this risk does nothing more than replace another one: the existence of a sizeable number of completely unemployed people is likewise a powerful motor of the underground

economy. A second consequence may be an increase in demand for part-time employment; but the unions are opposed in almost all European countries to an expansion in part-time work, since it would accentuate the discrimination between a primary and a secondary labour market.²⁰⁾

The union strategy is precisely to avoid such effects by calling always and everywhere for total wage compensation. This is part of a rigorous logic aimed at preventing expansion of an ill-controlled area of the labour market, and on the other hand at combatting a policy of passive adaptation of the supply of labour to employment. "It must be recognized that the reduction in working hours is not genuinely a collective demand raised by the majority of workers."²¹⁾

An approach to the condition set out previously implies both partial wage compensation and a contraction of wage scales. The impact of these measures on firms will be differentiated according to the employment structure necessary for their functioning. Another possibility is for the State budget to take over all or part of the wage compensation.

Shortening working hours therefore generally implies compensating, at least partly but also in a differentiated manner, for its effects on workers' incomes. Recent French experience shows this well, difficult as it may be to know what the wage increases might have been if the working week had not been cut by an hour. In a dynamic perspective, it is the difference between this hypothetical situation and the actual change in remuneration that determines the extent of the compensation.

If it is true that the present situation can be analysed as a situation of classical unemployment ("too" high real wages), then a better alternative would exist to a shortening of working hours. A reduction in wage rates would have positive effect on both employment and production. The problem is knowing what is the elasticity of employment in relation to real wages. If this elasticity is too small, such a policy would be completely impracticable, since the wage cut needed to restore full employment would be too great.²²⁾

But is this diagnosis well founded? Recent work by the OECD and the EEC seem to prove this. They use a concept created ad hoc, "the real wage gap", regarded as measuring the difference between the real wage and its equilibrium level. This gap is supposed to be notably positive for Belgium, France, and Italy . . . but also for Japan. Serious theoretical and empirical doubts may therefore be cashed on the significance of this gap as a measure.²³⁾ Another diagnosis might be formulated, leading to a different policy.²⁴⁾

o
o o

Our rapid survey of the problems raised by cutting working hours as an employment policy is probably too negative. This is due more to the philosophy underlying this type of measure than to the "scientific" knowledge of its consequences. Simulations done using econometric models ought as we have seen to be analysed with circumspection. The uncertainty in their quantitative evaluations is because they are based on prior calculation

of the direct effects of shortening working hours; but these effects are not very well known. Some of its indirect effects cannot, moreover, be taken into account. Would a considerable reduction in working hours bring with it a change in consumption patterns?

This uncertainty is combined with those regarding the diagnosis one makes on the situation of the economy, and regarding the probable development of its international environment.

Shortening working hours is a policy consisting in adapting to prospects felt to be bad for the future, rather than trying to modify them. It also pertains to a new system of international relations, "competition through depression". It is our conviction that the context in which it is implemented --adjustment of the supply of labour rather than of the employment--leads wage earners to perceive it as a constraint. Its ambition is not to absorb unemployment but to distribute it differently. Things would be different if it were taken in the context of a positive sum game. But precisely its chances of success are subordinated to the hypothesis of no increase in productivity.

Alternatively, one might regard our societies as having become sufficiently rich to allow for less work. Why then impose a redistribution of income among workers alone? Why not think of a bolder redistribution not only of income but also of wealth among all social categories?

A N N E X

=====

THE RELATION BETWEEN WORKING HOURS AND PRODUCTIVITY (FRANCE,
ITALY AND THE UNITED KINGDOM)*

1. Method of estimation

The variable "potential hourly productivity" is constructed on the basis of the endogenous variable of hours worked. An estimation using the method of ordinary least squares would therefore not give estimators converging in probability. The method of instrumental variables was therefore used. Potential hourly productivity was first estimated as a function of potential productivity per worker, the growth rate of the gross domestic product and investment. The estimated value of potential hourly productivity was then introduced as an explanatory variable into the relation.

2. Results

The variables are defined as rates of variation.
Their definition is as follows:

H = weekly hours of work recorded by firms

Q = gross domestic product

I = investment in equipment including leasing, in constant national currency

Q/N = potential productivity per head

\hat{Q}^* = estimated potential hourly productivity

*The authors would like to thank Giancarlo Rossi for doing the calculations relating to these relationships.

The data are quarterly and apply to the period from 1963 (first quarter) - 1980 (fourth quarter). The rates of variation are defined in percentage with a lag of four quarters.

The figures in brackets under the regression coefficients represent the t of Student, R is the correlation coefficient, DW is the value obtained from the DURBIN-WATSON test, $\hat{\rho}$ is the first order autocorrelation coefficient.

FRANCE

$$\dot{H} = -0,11 \dot{Q}_1^* + 0,01 \dot{Q}$$

(-3,26) (1,5)

$$R^2 = 0,9; \text{ DW} = 1,05; \hat{\rho} = 0,9$$

- Estimation of potential hourly productivity

$$\dot{Q}_1^* = 1,37 + 0,88 (\dot{Q}/N) + 0,01 \dot{I} - 0,012 \dot{Q}$$

(2,) (9,38) (0,91) (0,4)

$$R^2 = 0,89$$

ITALY

$$\dot{H} = -0,11 \dot{Q}_1^* + 0,644 \dot{Q}$$

(-5,28) (8,46)

$$R^2 = 0,73; \text{ DW} = 1,91; \hat{\rho} = 0,5$$

- Estimation of potential hourly productivity

$$\dot{Q}_1^* = 3,2 + 0,503 (\dot{Q}/N) - 0,045 \dot{I} - 0,011 \dot{Q}$$

(2,8) (5,03) (0,21) (0,22)

$$R^2 = 0,82$$

UNITED KINGDOM

$$\dot{H} = -0,3 \dot{Q}^* + 0,35 \dot{Q}$$

(4,91) (8,69)

$$R^2 = 0,65; DW = 2,14; \dot{Q} = 0,3$$

- Estimation of potential productivity

$$\dot{Q}^* = 1,11 + 0,66 (\dot{Q}/N) - 0,003 \dot{I} - 0,0009 \dot{Q}$$

(2,26) (33) (0,5) (0,1)

$$R^2 = 0,98$$

3. Some observations

The French relationship shows a high first order auto-correlation.

In the estimations of potential hourly productivity, the changes in production and in investment are never significant.

Notes

- 1) Other methods of rationing are obviously possible and used: lowering the retirement age, extending compulsory schooling, lengthening annual holidays, etc. Though they do not have the same consequences as those of cutting working hours, they proceed on the same philosophy: adjusting the supply of labour to employment instead of employment to the supply of labour.
- 2) The effects on employment of the 1936 introduction of the 40-hour week are controversial (cf. A. Sauvy). This was a great and necessary social conquest; but while it may be legitimate not to separate the economic from the social, it is not legitimate to seek at any cost to justify a piece of social progress that is good in itself by doubtful economic benefits.
- 3) These simulations were done as part of the preparatory work for the plan. Cf. Y. Barou and J. Rigaudiat (1983; Chapter 2).
- 4) The models assume that the recruitment behaviour of firms is similar whether they have to cope with the needs of an increase in demand or those of a reduction in working hours.
- 5) There are of course exceptions. Cf. INSEE (80a).
- 6) Cf. J. Drèze and F. Modigliani (1981).

- 7) A shortening in working hours implies, on the DMS model, a corresponding reduction in productive capacity, while in METRIC it is entirely compensated for by a growth in labour productivity (cf. G. Oudiz, E. Raoul and H. Sterdyniak, 1979).
- 8) In the DMS model, the growth in the demand for labour is more than proportionate to the reduction in hours worked, since the maintenance of productive capacity calls for the use of older equipment.
- 9) For a formal demonstration, refer to the article by J.P. Fitoussi and N. Georgescu-Roegen (1980).
- 10) It is only because authors habitually confuse labour force and labour services in representing the production function that this result is unknown. It recalls Karl Marx's objection to Nassau Senior's assertion that profit was earned during the last hour of the working day. For Karl Marx, it was instead proportional to the total number of hours worked.
- 11) As in vintage models such as DMS.
- 12) On this point see, in particular, Y. Barou, F. Perronet and F. Rocherieux (1982) and Y. Barou and J. Rigaudiat (1983).
- 13) The inverse connection is clearly better known and more studied (cf. G. Tahar, 1981, 1982).
- 14) Cf. J. Drèze (1980).

- 15) Cf. in particular, E. Denison (1967) and E. Malinvaud (1973).
- 16) Cf. Y. Barou, J. Rigaudiat and A. Doyelle (1982).
- 17) This relationship may of course be given another interpretation. Shortening working hours may be the means for employers to secure acceptance for a further increase of productivity (Cf. Y. Barou, F. Peronnet and F. Rocherieux, 1982).
- 18) Our method of estimation has moreover not allowed elimination of the autocorrelation of remainders in the relationship estimated for the French data.
- 19) Cf. J.P. Fitoussi and D.M. Nuti (1982).
- 20) Cf. Commission of European Communities (1982).
- 21) Journal CFDT "Aujourd'hui", January 1982.
- 22) Cf. J. Drèze (1979).
- 23) Cf. G. Basevi, O. Blanchard, W. Buiter, R. Dornbush and R. Layard (1983).
- 24) Cf. J.P. Fitoussi (1982).

Bibliography

- G. Basevi, O. Blanchard, W. Buiter, R. Dornbush and R. Layard (1983): "Macroeconomic Prospects and Policies for the European Community", Economic Papers no. 12, E.E.C., April.
- Commission of the European Communities (1982): "Memorandum on the Reduction and Reorganization of Working Hours", December.
- Y. Barou and J. Rigaudiat (1983): Les 35 heures et l'emploi. La documentation française.
- Y. Barou, J. Rigaudiat and A. Doyelle (1982): "Réduction de la durée du travail et comportement des entreprises. Synthèse des études monographiques disponibles", Travail et Emploi, July-September.
- Y. Barou, F. Perronet et F. Rocherieux (1982): "Réduire la durée du travail. Analyse macroéconomique et enjeux sociaux", Travail et Emploi, July-September.
- E. Denison (1967): Why Growth Rates Differ, The Brookings Institution.
- J.H. Drèze (1979): "Salaries, emploi et durée du travail", Recherches économiques de Louvain, March.
- J.H. Drèze (1980): "Réduction progressive des heures et partage du travail", Intervention at the 4th Congress of Belgian French-speaking economists.
- J.H. Drèze and F. Modigliani (1981): "The Trade-Off Between Real Wages and Employment in an Open Economy", European Economic Review, no. 1, vol. 40.
- J.P. Fitoussi (1982): "Politique monétaire ou politique économique?", Observations et Diagnostics Economiques, no. 1, June.
- J.P. Fitoussi and D.P. Nuti (1982): "Indicizzare i Salari alla Disoccupazione?", Politica ed Economia, November.

- J.P. Fitoussi and N. Georgescu-Roegen (1980): "Structure and Involuntary Unemployment", in E. Malinvaud and J.P. Fitoussi (eds.): Unemployment in Western Countries, MacMillan.
- INSEE (1980): "Maximiser l'emploi. La réponse de METRIC", November.
- E. Malinvaud (1973): "Une explication de l'évolution de la productivité horaire du travail", Economie et Statistique, September.
- G. Tahar (1981): "Durée du travail, Investissement et Emploi: étude monographique", Toulouse CEJEE, University for Social Sciences.
- G. Tahar (1982): "Combinaison productive et durée du travail", Travail et Emploi, July-September 1982.

EUI ECONOMICS DEPARTMENT WORKING PAPERS

- | | | |
|----------|--|--|
| No. 1 : | Jacques PELKMANS | The European Community and the Newly Industrialized Countries |
| No. 3 : | Aldo RUSTICHINI | Seasonality in Eurodollar Interest Rates |
| No. 9 : | Manfred E. STREIT | Essay on the Adequacy of an Abstraction |
| No. 10 : | Kumaraswamy VELUPILLAI | When Workers Save and Invest: Some Kaldorian Dynamics |
| No. 11 : | Kumaraswamy VELUPILLAI | A Neo-Cambridge Model of Income Distribution and Unemployment |
| No. 12 : | Kumaraswamy VELUPILLAI
Guglielmo CHIODI | On Lindahl's Theory of Distribution |
| No. 22 : | Don PATINKIN | Paul A. Samuelson and Monetary Theory |
| No. 23 : | Marcello DE CECCO | Inflation and Structural Change in the Euro-Dollar Market |
| No. 24 : | Marcello DE CECCO | The Vicious/Virtuous Circle Debate in the 20s and the 70s |
| No. 25 : | Manfred E. STREIT | Modelling, Managing and Monitoring Futures Trading: Frontiers of Analytical Inquiry |
| No. 34 : | Jean-Paul FITOUSSI | Modern Macroeconomic Theory: An Overview |
| No. 35 : | Richard M. GOODWIN
Kumaraswamy VELUPILLAI | Economic Systems and their Regulation |
| No. 46 : | Alessandra VENTURINI | Is the Bargaining Theory Still an Effective Framework of Analysis for Strike Patterns in Europe? |
| No. 47 : | Richard M. GOODWIN | Schumpeter: the Man I Knew |
| No. 48 : | Jean-Paul FITOUSSI
Daniel SZPIRO | Politique de l'Emploi et Réduction de la Durée du Travail |
| No. 56 : | Berc RUSTEM
Kumaraswamy VELUPILLAI | Preferences in Policy Optimization and Optimal Economic Policy |
| No. 58 : | Manfred E. STREIT | Reassessing Consumer Safety Regulations |
| No. 60 : | Jean-Paul FITOUSSI
Daniel SZPIRO | Adjusting to Competitive Depression: the Case of the Reduction in Working Time |
| No. 64 : | Marcello DE CECCO | Italian Monetary Policy in the 1980s |
| No. 65 : | Gianpaolo ROSSINI | Intraindustry Trade in Two Areas: Some Aspects of Trade Within and Outside a Custom Union |
| No. 66 : | Wolfgang GEBAUER | Euromarkets and Monetary Control: the Deutschmark case |
| No. 67 : | Gerd WEINRICH | On the Theory of Effective Demand under Stochastic Rationing |
| No. 68 : | Saul ESTRIN
Derek C. JONES | The Effects of Worker Participation upon Productivity in French Producer Cooperatives |
| No. 69 : | Berc RUSTEM
Kumaraswamy VELUPILLAI | On the Formalization of Political Preferences: a Contribution to the Frischian Scheme |

